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Number 18 Early Summer 1978 $1.25

FARMSTEAD MAGAZINE

Home Gardening & Small Farming

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FEEDS

Lawrence, Mass. 01842

THE $12,000.00 HOUSEWIFE

By Edward C. Lane, Ph.D

Have you tried to make an honest dollar at home lately?

My wife and I did. And, we found ourselves flooded with bogus envelope stuffing schemes, "party plans", and a variety of other non-profit balderdash. It was a sour experience.

Then, several years ago at a bridge party, one of the guests began discussing a very different and special home "money project". The secret was literally whispered across the table.

My wife and I discussed the idea on the way home and decided to try it.

The project kept us busy about four hours a week. We used our dining room as an office.

At first our earnings were low—$25.00 to $30.00 a week. But as the months went by, we began making hundreds of dollars at home on the weekends. It was almost beyond belief.

Obviously, this was too good to keep to ourselves. So I explained the project to my mother. She was over seventy and lived alone in an apartment in Akron. But within the first 87 days she made over $2,200.00 in cash from the same money project.

As our curiosity grew, we discovered a variety of other people making money but with somewhat different money projects.

1. Consider the case of Mary Rittenhouse from Cleveland. For over six years she's been earning thousands of dollars at home in her spare time.

- She provides a needed service in her neighborhood.
- No one comes to her home — nor does she go to anyone else's.
- She uses only her telephone, a spiral notebook and a small filing box.
- She makes up to $100.00 per week, spare time.
- Her service requires no technical skill of any kind. Some states require a simple license.
- Mary works for no one else. She does no selling whatsoever. Most of her clients call her at home.
- What she does is so moral and supremely honest she could probably get a written endorsement from most clergymen.
- Her service is so simple that almost anyone could start the same project in just 9 days.

Again, these data are accurate or we couldn't—and wouldn't—print them.

2. John and Irene Tendy started this same special money project over 10 years ago. They report earnings as high as $12,000.00 per year . . . all earned at home.

3. An Oregon husband-wife team started the same project we started. In a recent letter they reported gross income of $4,600.00 in only 45 days. That's even better than we did!

Obviously, this is exceptional income. What you make is largely up to you. But the income potential of some "money projects" can be staggering! For example, two Colorado women started one several years ago with only twelve dollars. This year—operating full time—they made over $38,000.00.

This income was verified in a recent national press report.

HOW TO START

This is not a get rich quick scheme. These "money projects" require time and effort.

But, you don't need "money." Most of these projects can be started on less than $25.00. . . many on less than $10.00.

You don't need a car for most projects . . . in a few cases it would be helpful, but not necessary.

You don't need youth. Maturity and experience are excellent assets.

You don't need an "office." Just one corner of a spare room is usually sufficient.

Best of all, you don't need to wait. As we said before, many of these projects can be started in just 9 days.

We've put everything . . . every secret . . . in a simple guide. It's entitled *THE $12,000 HOUSEWIFE.*

PUBLISHER'S NOTICE

All data presented here are supported by correspondence and bank records on file. All the money projects described are independent. They do not involve you in any commercial "work-at-home" schemes or businesses in which you must deal in any way with a parent company.

All money you may receive will be your own.

Your satisfaction with this book is absolutely guaranteed or your money will be promptly refunded.

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TRY THIS TEST

1. When your book arrives, select just one money project . . . the one you like best.
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3. At the end of this trial period examine your income. If you're not satisfied with the results, return the book and we will still REFUND YOUR FULL PURCHASE PRICE.

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FARMSTEAD

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Staff

FARMSTEAD MAGAZINE is published bi-monthly by The Farmstead Press. Advertising, Editorial and Subscription offices are at P.O. Box 111, Freedom, Maine 04941; telephone (207) 382-6200. Second class postage paid at Belfast, Maine 04915 and at additional mailing offices.

Subscription rate is $6.00 for one year (six bimonthly issues plus an Annual), $10.00 for two years and $14.00 for three years, in the United States, its possessions and Canada. Subscriptions surface mailed abroad $8.00 per year; airmailed abroad $10.00 per year.

POSTMASTER: PLEASE SEND CHANGE OF ADDRESS FORM 3579 TO FARMSTEAD MAGAZINE, BOX 111, FREEDOM, MAINE 04941

Letters

Dear FARMSTEAD:

I like your magazine and thought the last issue was extra good. I hope you will never let it become a "slick" magazine. I don't like them.

One thing I like about *Farmstead* is the variation of its advertising. Some of our farm magazines are lopsided with machinery ads.

And please don't come up with the use of the metric system in your magazine. That would be the last straw.

I got a lot of information I wanted out of your potato article (Winter, 1978) and I agreed with the dog article one hundred percent, but I am not a "dog person"; I'm for cats.

I am a retiree, 77, active and love gardening and doing many things myself. Lived in a rural life until I retired from a 30-year spell of teaching rural schools in the spring of 1966.

There now, *Farmstead*, I think we've been properly introduced. I wish you great success and a long life.

Grace Baldwin
Box 297
Newport, Nebraska

Dear FARMSTEAD:

I enjoyed the article "Dining on Daylilies" (Spring issue, 1978). They are absolutely delicious—but also quite laxative. Beware!

Virginia G. Trafton
Auburn, Maine

Dear FARMSTEAD:

I raised a whiteface bull for six years and used him steadily until I butchered him. He dressed out at 594 pounds, and was the best meat that I've ever tasted. Right now I have a bull that is two years old, and I plan to butcher him at the age of six years. If a steer or heifer is finished off right before slaughter, he or she will always be good. What I mean by "finished off" is: keep him in the barn or tie him up for one-and-a-half months and put about 150 pounds of cornmeal with grain into him.

When you cut him up, he will be nice and fat and tender.

Joe Dennis
Leaches Point
Bucksport, Maine

Dear FARMSTEAD:

In the Winter, 1978 issue, you printed a letter from Mrs. Vollendorf asking for sources of broom corn seed. I've sent her some of mine — saved from what I grew this year from a start an elderly farmer gave me last spring. But perhaps other readers would like to know about sources. Here are two:

Gurney's
Yankton, South Dakota 57078

Grace's Gardens
22 Autumn Lane
Hackettstown, New Jersey
07840

Have a great new year!

Nancy Bubel
RD 1
Wellsville, Pennsylvania

Dear FARMSTEAD:

We have 18 acres of land and since subscribing to your magazine, we have learned to do many things with it that we didn't know before. Even your articles on childbirth (Early Summer, 1977) were helpful — my neighbor started having labor pains (she was having twins) and another neighbor and I got your back issues out to freshen our memories on the subject in case we had to help deliver, as there was a good storm blowing and no transportation (hardly) to the hospital.

Cynthia Cornell
Berkley, Massachusetts

MOVING?

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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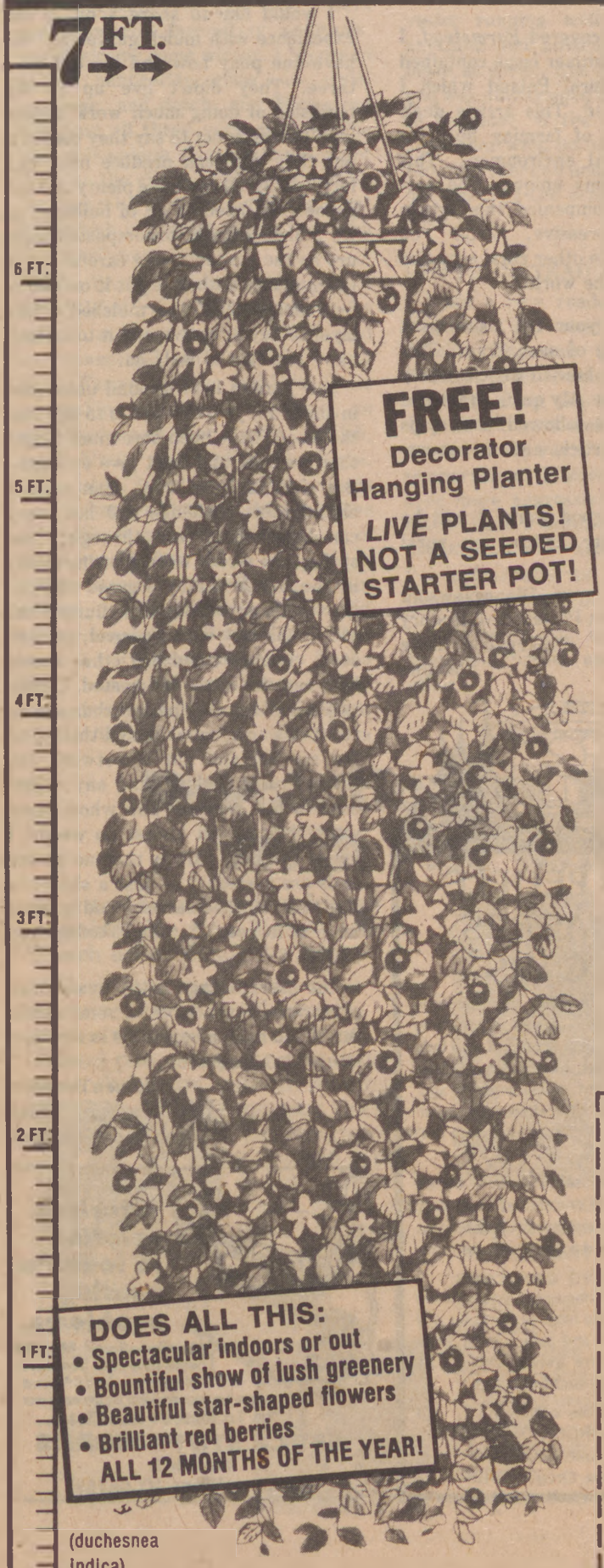

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MAIL THIS NO-RISK COUPON TODAY

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Roberts Lane, Glen Head, NY 11545

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- ☐ (#003) SAVE $2.44—3 Fountain O' Flowers Plants and 3 FREE planters only $6.97 plus $1 postage & handling

I understand that if my Fountain O' Flowers Plants don't zoom 7 feet and touch the floor in just 7 weeks, I may return my order for complete refund of my purchase price (less postage & handling, of course).

Name_____

Address_____

City_____ State_____ Zip_____

Dear FARMSTEAD:

I have just discovered *Farmstead;* I enjoy it. Your summer issue contained an article on Rural Poland which I especially enjoyed. This article dealt with techniques of farming but also with the cultural environment. This combination seems unique. The artwork which accompanied this article was quite impressive. Could you feature articles on other rural societies other places of the world?

An article in your fall issue dealt with the making of sauerkraut. This was a practical, how-to article which was easy to follow. My quick-kraut had always failed. I followed the steps given in your article and my sauerkraut is good.

Keep up the good work. I will be looking for other articles on rural societies.

Diane Newsom
Assistant Professor of History
Tuskegee Institute
Alabama

Dear FARMSTEAD:

I would like to share a bit of our experience with mulch gardening. We have one pony now and we did have three. They didn't live up to my fantasies of doing much work around here (which is not to say they couldn't) but they sure can produce nice, rich fertilizer. Well, we have plenty and our garden soil needs a lot of building, so we mulched fresh, uncomposted manure on the garden, being careful not to touch plants with it. I put it on two to four inches thick and mulched a thin layer of hay or straw over it to make it more pleasant to walk on.

Our garden is on ground untouched in about 15, years, which is to say that the weeds have been here much longer than we have and don't give up easily. But that layer of fresh manure is a considerable challenge and not many can bully their way through. Last spring, the weeds were growing madly by the middle of May. I grass-whipped the weeds down; dug and churned the soil in the row with a shovel; planted seed, manure mulched the weeds between the rows and rested. I even skipped all the digging and churning on two rows and just skimmed the top of the sod off and put it between the rows. I sure couldn't find any difference in the growth. The whole place was a jungle, but almost no weeds! I guess the best part is that no power tools are necessary — just a shovel, a fork, and a wheelbarrow (and a grass whip if it gets that high before you mulch).

The disadvantage is the availability of manure. Some have it, some don't. But if you have plenty, this is one way to use that resource.

Steven Benedict
RR2
Penn Yan, New York

Dear FARMSTEAD:

My, what a job you have done with your magazine! The new color covers are wonderful face-lifting additions, very welcome come winter. I rejoice to see a publication grow, in style, coverage, and depth, and *Farmstead* has done all three very quickly. The format is unique, to me at least, right down to the choice of the paper used. Do stick with it and avoid the "glossy" look which is a great temptation with "country" magazines.

John Vivan's article about dogs on a farm (Winter, 1978) interested me greatly, as I have always had dogs, and am "connected" with an Olde Downe Easte Farme, by love and luck, if not ownership. We have, at present, an olde Border collie, the classic, Scottish, solid black with white markings, rich-coated, full-plumed tail type — as every shepherd knows, Border collies are indispensable, for the keeping of children as well as sheep.

We also have a Siberian husky mixture (a collie mixture) and I would like to suggest to John Vivian that there is not a wolf connection in the husky, which prompts it to chase sheep, but rather the running instinct. As Mr. Vivian notes, the husky is a sled dog, and I think it is "bred to sled," because it is a runner by blood and *not* a hunter. Our Zuppence cannot resist running *with* — not *at* — anything and anyone, who elects to move at speed. She lives with a flock and was duly trained that sheep are not to be *raced*. If the sheep, who now know her well, do not panic and flee, she pays them no undue attention. She does mother the orphan lambs somewhat too.

Linda Holz
Camden, Maine

Dear FARMSTEAD:

I am a new reader of *Farmstead Magazine* and read John Vivian's article "Dogs on the Homestead" (Winter, 1978). I disagree on the part he wrote about the Siberian husky—they *do not* have wolf in them, (not a purebred, anyway); and as far as the temperament, it goes two ways. I've seen more aggressive malamutes. I'd rather have a dozen Siberians to one malamute. I'd like him to see my dogs. I've had as many as 15 Siberians at a time and no problems.

I obedience train my dogs as well as show and breed, and one helps the other.

Mrs. George Loescher
E. Princeton, Massachusetts

Dear FARMSTEAD,

We have been enjoying your magazine for some time now. However, we were once again impressed by John Vivian's willingness to display his ignorance to mislead others about still another topic he knows little about: dogs. (Winter, 1978)

First of all, it happens to be against the law—and for good reason—for dogs to run deer. We all agree deer can be a nuisance in the field corn but there are other ways to keep them out without encouraging your dog to run them. Anyone who has seen what healthy, well-fed pets can do to deer will abide by the laws. We have found deer with no hind-quarters or all their legs missing—still alive—after somebody's Curly or Joe ate most of it just for fun.

While we heartily agree folks should be watching what their dogs are really up to, there should be no need to protect livestock from your supposed guard dog. And there are many breeds of dog bred especially for protecting both you and your livestock from harm, such as Great Pyrenees or komondors.

Malamutes, mentioned as excellent farm dogs by Mr. Vivian, are anything but good with livestock, no matter how well-treated. Friends who breed malamutes will tell anyone they have to constantly protect their livestock from their dogs. The malamute is still being bred back to the wolf regularly in some parts of the world, and exhibits classic wolf behavior. They utilize their dogs for sledding wood in winter with great success, so they are functioning in their proper capacity there.

There are many breeds of dog cultivated with great care for their natural abilities with livestock. For example, the komondor is bred especially for protection; the Border collie is one of the better breeds for moving livestock from here to there with a minimum of fuss. Other breeds, such as the Australian kelpies, cattle dogs and shepherds, have thousands of years of experienced stockmen and women backing their ability to work with livestock. To start with a dog of any other breed not used to livestock is, as often as not, both fighting uphill for the owner and misery for the dog.

Still further along, Mr. Vivian plays doctor with his misinformation. Dogs *rarely* get colds. Perhaps this relates directly to Mr. Vivian's advice to feed cheap dogmeal. Many of the most expensive brands are no better but it should be remembered that drainage oil and sawdust meet all a dog's nutritional requirements—and could say so on the label—and yet be completely indigestible by the animal. There are middle-of-the-road dog feeds that are completely adequate. It only takes a few minutes to read the label and find out exactly what is in the food.

And cold symptoms are indicative of many things: foreign bodies, worms, distemper, kennel cough, electric shocks, heart murmurs and allergies. Unless you *do* have some idea of what you're about, take your dog to the vet when it's not well. A healthy atmosphere is the reason most of us want to live in the country. This can and should extend to those animals who share our lives there—cats and dogs included.

L. Pelley, Director
Jefflin Farm, School of Homesteading
RD#1 Guiles Road
Barton, New York 13734

John Vivan gulps twice and responds:

Mrs. Loescher, I'm sorry to put down your beloved Siberian huskies. A pro handler like yourself is welcome to exercise the gorgeous animals in my sheep pasture any old day. However, few new-to-the-land homesteaders will have the cash for a good purebred dog, to say nothing of the time and skill to keep a potentially ornery critter obedience-trained. (At least, we didn't.) And, sad to say, the husky-based mongrels with one blue and one white eye that are let roam in our woods have earned a really bad reputation among keepers of all kinds of livestock hereabouts.

Mr. Pelley has so consistently misread the whole article I don't think it necessary to point up more than one distortion to answer the lot. He starts out by trying to insinuate that I encourage dogs to run deer illegally by misconstruing at length my brief statement, "Our big dogs chase the deer out of the field corn ..." As any experienced countryman could have told him, when the corn's growing, woodland cover is so thick that only a trained hunting hound can track a healthy whitetail for more than a few jumps. And, there isn't a dog made that can run one down. Leash law applies when the herd is vulnerable: winter, when they can get bogged down in the snowpack, through spring when young are small and animals may be winter-weakened. Dogs let run loose to join packs are the culprits — a serious problem addressed further on in the article, but ignored by Mr. Pelley.

Both readers dispute my experience with malamutes. People trying to breed them "back to the wolf" deserve all the problems they get. The well-bred malamutes I know and love are treated as Mrs. Loescher treats her Siberians and they are great homestead hounds. They are huge beasts, require continual training and human attention and they do pack away a lot of dogfood. Depends on how you assign the cash and labor priorities on your own homestead, I guess. How's that song go? "Some folks likes po'k chops, some folks likes hamhocks and some folks likes vege-table soup ..." Well, friends, "You may like dash-ounds er keeshounds er ho'hounds. But John still likes them big malamutes."

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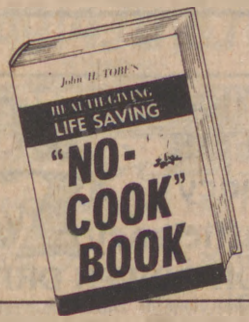

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The foods most of us eat and seek to nourish our bodies with today have not only been found *non-nutritious* — but *positively harmful.*

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Send 25¢ for a catalog to Murray McMurray Hatchery, 135, Webster City, Iowa 50595; or 50¢ for a catalog to Allen Hatchery, Box 46-10, Windsor, Missouri 65360.

What can I do to prevent "blossom end rot" in my tomatoes this year?

Tomato plants need sufficient amounts of calcium for healthy growth, according to Dr. Alan Gotlieb, Extension plant pathologist at the University of Vermont, and a deficiency of this nutrient, as well as low soil moisture levels can cause blossom end rot. An excess of soluble salts such as ammonium, magnesium, potassium, or sodium will often reduce the concentration of calcium salts available to roots in the soil. In addition, poor soil moisture can reduce calcium availability. This lack of calcium generally won't affect development of stems and leaves but will injure the tomato fruit.

The disease frequently occurs when plants have grown rapidly during the early part of the season, then are subjected to long periods of dry weather when the fruit is developing. Excessive wet weather can smother root hairs and cause rot during sudden hot spells in mid-summer.

Symptoms of blossom end rot are a water-soaked spot near the blossom end of the fruit. This lesion or spot darkens and enlarges while the fruit is still immature, but will shrink and become leathery and dark brown as the fruit ripens. The tissues of the lesion may also split, allowing secondary fungi and bacteria to enter the wound.

The plants most susceptible to the disease are the ones set out too early in cold soil or cultivated too closely. Tomatoes on staked plants are also more likely to become infected than the fruit of prostrate or bushy plants, due to drying conditions.

To minimize blossom end rot problems, try to maintain a uniform moisture supply in the soil by irrigating during dry weather. The soil should be saturated to a depth of at least six inches. A good soaking every few days is better than a light watering every day since the alternation of moist and dry conditions can worsen the problem.

A thick layer of leaves, hay, or other organic mulch will help prevent the soil from drying out too rapidly.

To help maintain the proper calcium balance, apply fertilizers high in superphosphates and low in nitrogen to soil before planting. The foliage may also be sprayed with a dilute calcium chloride solution (one tablespoon per gallon of water) during rapid growth periods.

Calcium chloride can be purchased at most hardware or department stores as a sidewalk de-icing salt. Just be sure you are buying calcium chloride and not sodium chloride. Apply early in the growing season, preferably within 24 to 48 hours after heavy leaching rains.

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Could you advise me of a wild shrubbery supplier from whom I might buy a bayberry bush?

Darrell Rolerson of Islesboro, Maine, says, "The best way to start bayberry is from seed — since the plants often grow in the most barren terrain, it is difficult to extricate them without doing them a lot of damage to their root system, consequently causing the plant unusual shock. Bayberry seeds are available from A World Seed Service, P.O. Box 1058, Redwood City, California. Ask for *myricaceae;* give the catalog code: MYRI-6; and send 50¢, plus 13¢ for postage. It seems paradoxical to send all the way to the West Coast for eastern bayberry, but that's the way it is. Sow the seeds in autumn in rows eight to 12 inches apart, covering with ¼ inch of firmed soil. Keep a mulch on fall-sown seeds until after late spring frost. For spring sowing, the seeds should be stratified for 90 days (in moist sand); then planted.

Bayberry is an aromatic shrub from whose fruit wax is obtained, either for scenting or making candles; whose bark and root and leaves have a long history of use medicinally; whose bark and root are used in tanning. It is an ideal landscape plant, attractive to approximately 50 species of birds. This indigenous shrub thrives on poor soil, slightly acid. Where blueberries or juniper grow, bayberry loves it!

Can you give me some advice on growing comfrey?

Comfrey grows best in sweet soil, pH 6.0 to 7.0. If soil is acid, add lime. Comfrey can be planted any time that the ground can be worked. For large plantings, prepare the soil like you would for corn or potatoes. It is well to work manure into the soil beforehand. Comfrey can take most any manure; avoid commercial fertilizers. The first year you will have to water during a dry spell. The second year takes less care. The third year it will thrive without water as the roots will be six to 10 feet deep. A planting of comfrey will last for years.

It is planted three feet by three feet, or three feet by two feet in the row. Mark it off and plant at the crosses, so that a machine can be used for weeding. Gradually, the ground is so well-covered that hardly any weeding is necessary. Three by three foot plantings allow 4840 plants per acre; three by two, 7260 per acre. Comfrey is a hybrid, most seed is sterile. For large plantings, root cuttings are usually used. For home use, crown cuttings are preferred. They make a plant quicker than the root cutting.

Both roots and crowns should be planted three to five inches deep. Lay the cuttings flat. Whole plants should be planted in their natural positions, but two inches below the surface. Firm the soil around the roots. If cuttings should be wilted upon arrival, place them in cold water for a few hours. Then, plant as soon as you can. Comfrey will grow even if not planted. Keep the soil moist around the roots.

The Wise and Useful Farm and Garden Guide

May

May is decidedly a working month, in which the husbandman must commit his seed to the earth in faith (not forgetting the "works") if he expects to reap a harvest in Autumn. In putting in seed, be it grain, corn, or roots, it is of the first importance that it be *well* done, for no after-labor, however thoroughly performed, can wholly compensate for wrong planting. To do this properly, prepare the ground by manuring well where needed, and with plow, subsoiler, and harrow or cultivator, loosen and pulverize the soil deeply and thoroughly. If good seed be properly put in now and the weeds kept down, failures will be comparatively few.

But for the particular operations of the farmer in addition to the work of last month, we have —

Beans to plant. They are easily injured by cold, and it is best not to plant very early. Cover lightly, say one half to three-fourths of an inch.

Broom corn — Plant as common corn, or in drills, four feet apart and thin to eight inches in the row.

Clover may be sown, with Spring grain.

Corn — Better let the ground be warm and dry before planting. It will come up stronger and succeed better. Let the ground be well-plowed and enriched. Test the seeds by sprouting before planting. Stretch white twine over the fields to scare the crows as soon as planted, and avoid leaving any corn uncovered to attract the birds.

Asparagus beds have doubtless been manured and forked over. Cutting will begin.

Brussels sprouts, Borecole, Broccoli and Kale — Sow. Plant from cold frames and hotbeds. Cultivate the same as cabbages.

Cabbage and Cauliflower — Sow, for late use. Plant out from hotbeds and cold frames if any remain. Scatter dry ashes or lime over the seed rows to protect the plants from the garden flea. Hoe former plantings and examine for cutworm.

Onions — If not sown as they should have been last month, put in.

Plowing — Turn up the soil thoroughly and deeply, or at least a little deeper than ever before.

Potatoes — Plant any omitted last month. Where seed is scarce and costly, cut to one or two eyes. We prefer sizeable potatoes cut in two or three pieces.

Poultry will require little care now if running at large. Where shut up, it is well to let them out for awhile about sundown, otherwise the quantity of eggs will diminish. Eggs may still be set for late chickens. Where practicable place chicken coops under plum or cherry trees. Their keen eyes will allow few insects to escape from the ground to sting the fruit.

Pumpkins — Plant, among corn, potatoes and by themselves. For family use, we prefer the cheese variety.

Root crops — Sow any carrots not put in; sow beets, leave turnips except for early market or family use, until June. Remember that one acre of roots will go further as stock feed, than several acres of hay. Let the soil be deeply and finely plowed and well-supplied with rotten manure.

Swine — The pens should now be well-filled with young porkers. Give the sows a full supply of food with plenty of drink, and a little salt occasionally. Keep from running at large.

June

The husbandman has very little leisure between putting in his late crops and commencing to till his first plantings. Even now, the first day of June, before the buckwheat and turnip fields are sown, the corn and potatoes, carrots and cabbages, require going through with the plow and cultivator, followed by the hoe. Some of the late implements designed to relieve hand-labor are well adapted to their work; the horse hoe almost takes the place of the hand-hoe in the cornfield. Whatever is used, see that the ground is well lightened up before the roots have extended far, and early keep down weeds.

Butter and Cheese — Read the prize articles as they appear from month to month, and try to make such products as will suffer no discount when thrown into market.

Carrots — Hoe and thin early. Much labor may be saved, and a better crop secured by taking the carrot, turnip and beet patch in hand before the weeds get a start. Thin out liberally. Four to six inches apart in the row is near enough for carrots.

Fences — Should be examined often.

Haying — Will commence, according to the forwardness of the grass. Mowing machines are now so common that the farmer need not commence upon his crop before the grass is ready to cut, nor will he need to cut it down while wet with dew or rain.

Potatoes — Keep free from weeds, but do not use the plow among them after they commence blooming.

Stock — Raise the best calves, lambs and pigs to breed from. Provide improved breeds of cattle and horses to cross with your own stock.

Using a Lawyer May Be Dangerous to your Wealth

I'm a lawyer myself—and I may be cutting my own throat—but I'm going to tell you the truth:

The bulk of what most lawyers do could be done by someone who had never seen the inside of a law school—and usually is.

Lawyer's *secretaries* do most of the work on wills, divorces (as well as annulments and legal separations), bankruptcies and creditor plans, simple contracts, real estate deals (buying, selling, and leasing), run-of-the-mill personal injury cases, adoptions, filing home steads, insurance claims, minor criminal cases . . . and the list goes on and on.

And what do these Legal Secretaries do? They follow directions and fill in the blanks on forms. That's all. It's as simple as that.

That's why I think you may be ready to try being your *own* lawyer—and save a 'ton' of money.

But before you decide, answer these two questions: (1) Can you follow simple directions—no more complicated than assembling a Christmas toy or reading a cook book? (2) Do you have the few cents necessary to buy the correct forms at a Legal Stationery Store?

If your answer to both of those questions is "yes," you're *ready*. Well, *almost* ready. There are just two more things you should know:

(1) You don't necessarily have to have "the few cents necessary to buy the correct form at a Legal Stationery Store." Because I'll tell you how and where to get many of these forms *free*.

(2) You'll need a book. It's called "Do Your Own Legal Work." (And you *can* do your own legal work—no matter which State you live in!)

The book took more than a year to write. Based on what I've actually been earning in my law practice, that represents more than $100,000 worth of advice.

I mention that, not to brag, but so you'll know that I'm not some kid, fresh out of law school, and hungry for a few bucks. Along that line, you should know that I've been practicing for 13 years, and I've written the book about the legal problems I work with, day in and day out.

Some other things you might want to know: I've published technical legal articles that explain the law—to lawyers. I've served as a research assistant to a Judge of the U.S. Circuit Court of Appeals.

What will it cost you to "hire" a lawyer with those qualifications? Ten dollars. Just about what I—and lots of other lawyers—would charge you for 10 *minutes* of legal advice.

Why so cheap? Because I hope to sell a million copies—or at least enough so I can take some time off and enjoy life with my family.

That's what's in it for me.

And here's just a sample of what's in it for *you* (including complete directions and sample forms you can practice with):

Now I'm not saying that you're never going to need a lawyer. I *am* saying that if you do need to see one, you'll be *ready* and be able to handle a lot of the simple, clerical work yourself. You'll save *his* time.

Here's an example of how my book will cut down on those precious minutes: For an attorney to draw up a simple contract might cost you $400 if he had to start from scratch. It could cost you $30 if he had to take only a half hour to review the work you'd already done—and *can* do, using my book.

Lawyers get $60 for husband-wife wills; I'll show you how to do your own in less than an hour. Lawyers charge $450 for a simple divorce which may take less than two hours of their time. Lawyers get between $3,000 and $4,500 for obtaining a $9,000 personal injury settlement. I'll show you how to do as well, or better, by yourself. Lawyers get $150 for an adoption, but their secretaries do the work—and so can you.

Your best guarantee that my book is everything I say it is, is this: My fellow lawyers will be watching me like a hawk. I wouldn't dare mis-step or mislead you. It could cost me my license.

What's more, I'm so sure you'll find my book *immediately* profitable—that I'll let you read it *before* you pay for it!

Send me your check or money order today—and I promise not to deposit it for 30 days. That should give you time enough to look it over and decide whether to keep it or return it. If you do return it, I'll send back your *uncashed* check or money order.

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Celery — Set plants for a general crop in trenches, watering and shading for a few days.

Herbs — Many of these are now coming into flower. Cut and dry them in the shade when in full bloom.

Hoeing is *the* work for June, and needs following up closely. Besides keeping down weeds, it is almost rain and manure for the growing plants. Commence on every crop in season. If rows of young vegetables are left till they can scarcely be seen among the weeds, the labor of cleaning them out will be very great, and the plants themselves will be injured by disturbing the roots in eradicating the weeds.

Gooseberries — will be hoed, or better, mulch with salt hay, tan bark or sawdust, which will prevent weeds from growing, and keep the ground moist, thus rendering the berries less liable to mildew.

Lettuce — Sow and plant out at intervals of a week, during the month, to keep up a constant supply.

Peas, sown at this season, usually escape the weevil so that early in the month is a good time to put in the main crop. Sow in the middle and late part of the month for late use. Keep well hoed and bushed or supported with stakes and twine. Hilling a little is an advantage, unless they were covered two or three inches. The first sowing will furnish peas for the table.

Rhubarb — Is now yielding a full supply. By pinching off the seed stalks as they appear, the leaves may be pulled during the entire month.

Strawberries — Clean beds, and mulch with straw, sawdust, or tan-bark. They will soon be in full bearing.

Thinning out both vegetables and fruit should be attended to early. Plants are usually left too crowded.

Tomatoes — Set them out for late use. Keep well-hoed and bushed or staked.

Transplanting — Select cloudy or wet weather, or water and shade after the operation. Remove with the plants as much unbroken earth and undisturbed root fiber as possible. □

THOUSANDS REPORT

INSTANT PAIN RELIEF FOR SCORES OF AILMENTS

with MIRACLE MEDICINE FOODS

said to relieve pains immediately, fight infection with actual penicillin power!

...says Rex Adams: Did you know that scientists have discovered an amazing healing plant that seems to relieve every one of the signs and symptoms we associate with aging! A common plant, available everywhere, for pennies without prescription, he says –

- In *minutes* and even *seconds* this miraculous healing plant has relieved the agonies of liver, gall bladder, digestive and arthritic upset, merely by holding it against the skin, so penetrating are its powers!
- *Merely inhaling its fragrance* has relieved or cured serious lung ailments! Partaking of its juice has healed heart, vein, artery, circulatory and high blood pressure problems! *It's the most powerful antibiotic known in the form of pure food, with actual penicillin power!*

If ever there was a miracle practically all-purpose remedy, you've got it—not in your medicine chest—but in your vegetable garden! Now in a shocking book, Rex Adams, a medical research reporter, shows you how this *Miracle Rejuvenation Plant* and other foods have relieved or cured a wide range of ailments –

- Glaucoma and cataracts relieved, no surgery!
- Dying lung victims completely cured!
- Arthritic cripples completely healed!
- Gall bladder attack relieved in seconds!
- Failing hearts that were rejuvenated!
- Strokes, clots, paralysis, excess fluid (dropsy or edema), phlebitis, poor circulation, Buerger's disease, gangrene, leg ulcers, angina, dizziness, nausea and excruciating heart pain relieved!
- Bleeding hemorrhoids and varicose veins that disappeared!
- Horrible lumps, swellings, growths, gone!
- Painful swollen limbs completely healed!
- Horrible bladder infections, burning and scalding urine, kidney stones completely relieved, often immediately!
- Seemingly hopeless cases of ulcers, spastic colon, colitis, constipation, liver and kidney fatigue quickly relieved!
- Diabetics who were permanently cured, without drugs!
- How a man reduced 20 lbs in 12 days!
- Prostate trouble completely relieved!
- Breast pain, cramps, itch, swelling and other female problems completely relieved, often immediately!
- Hearing loss suddenly cured!
- Colds, flu, allergies, stuffed sinus, sharp head pains gone in minutes!
- Hay fever vanished in seconds!
- Burning tongue relieved!
- How loose teeth took root again!
- How victims of baldness, gray or thinning hair, wrinkles, age spots, warts, bedsores, eczema, ingrown toenails, senility, trembling and old age symptoms were completely relieved, cured or rejuvenated.

Miraculous healing power seems to exist in this plant! So safe that no prescription is needed—so powerful that certain medications have had to be eliminated under a doctor's care—there are people who were once unable to walk half a block without terrible pain who can now run, dance, swim and climb mountains, since using it, says Adams:

It has no rivals! God made it unique!

In one sensational cure, a 19-year-old girl who was born with a short, withered arm that was paralyzed and useless was treated with a mild form of this plant in hand baths and soaks, and was miraculously cured! Doctors said it was impossible! To prove it to a skeptical witness—she held our her hand and pinched him several times! The story appeared in all the Paris newspapers!

HEART DISEASE AND CANCER WERE VIRTUALLY UNKNOWN!

Records show people living well beyond 100 where this plant is eaten. One researcher found 40% of men over 90 still able to thread a needle without glasses! Doctors obtained sperm from a 119 year old man! Heart disease and cancer were virtually unknown, says Adams:

SIGHT AND HEARING RESTORED!

Dimness of vision, impairment of the field of vision, blackouts, inability to focus or see up close, have all been corrected with a substance this plant activates for rejuvenated nerve health. Nerve-caused hearing loss has also been corrected! Louis D. had these middle-year complaints. When this plant was added to his food, his hearing returned to normal. His vision without glasses was actually better than before, clear and sharp!

POOR MAN'S PENICILLIN!

It is the most powerful antibiotic known in the form of pure food! Against its juice, cold, flu and virus germs don't stand a chance! It cuts phlegm, fights infections, clears sinuses, bronchial tubes, and lungs. It kills the most horrible germs, even leprosy... gonorrhea... and gangrene in 5 minutes flat!

FIGHTS GERMS PENICILLIN WON'T TOUCH!

In lab tests, these germs were actually hurled to the side of a culture dish. *It even fights some germs penicillin won't touch!* Unlike drugs–this plant is safe. No harmful side effects, no limit to dosage have been found. Reportedly, one tiny milligram of this plant had the same power as 25 units of penicillin!

LUNG AILMENTS CURED!

Lung patients—near death's door—suffering all manner of respiratory ailments (asthma, emphysema, horrible lung abscesses, allergies, and bronchitis) have revived and walked away completely cured, praising this *Miracle Rejuvenation Plant!* One researcher reports 90% of such sufferers were quickly relieved or cured, says Adams –

ASTHMA AND EMPHYSEMA CURED! N.M., father of 5, was dying of asthma. His last attack nearly killed him, and he was afraid to move for fear of another seizure. With this *Miracle Rejuvenation Plant* he was cured, and had no more seizures. Myron E. could hardly breathe due to emphysema, with fits of wheezing, dizziness, heart pain. With this plant all symptoms vanished! A serious allergy sufferer says, *"It's like a new religious experience!"*

MORE SPECTACULAR REPORTS!

While no food can substitute for qualified medical care, and no one can guarantee instant pain relief or cures, yet amazing results are reported!

BLADDER INFECTION RELIEVED! Mrs. N.Q. suffered from cystitis (inflammation of the bladder, often with pain or burning urine). She tried this plant in a simple drink, and had immediate relief! Her doctor told her about a lung cancer patient who survived all expectations eating this plant, no cure claimed!

DOG'S BREAST TUMORS DISAPPEARED! A woman reports that her poodle had breast tumors a vet said were probably malignant. The dog was given the juice of this plant. In 3 weeks, the tumors disappeared!

PROSTATE RELIEVED! A man had an enlarged prostate, with difficult urination, frequent urges, bursting pains, painful infections, back pain. This plant gave him immediate relief, and he could urinate freely, says Adams!

GALL BLADDER ATTACK VANISHED! A woman was having a gall bladder attack with stabbing pains, nausea, and other symptoms. Touching this plant to her side in a wet pack relieved her pains immediately, so strongly penetrating are its powers, says Adams!

HIGH BLOOD PRESSURE RELIEF!

In hundreds of tests, this plant reduced blood pressure, regardless of age or condition, often permanently! One doctor noted vast improvement in *only one hour!* In one case, an overweight middle-aged man discovered that his pressure dropped from 190/90 to a mere 130/75, without dieting! It seemed safer and better than any drug!

CHOLESTEROL IS MELTED AWAY! *A major breakthrough* is that the juice of this plant dissolves the gooey sludge involved in hardening of the arteries, according to two doctors! They said this plant could rid one of the build-up of fatty deposits on artery walls and help prevent arteries from clogging! The juice of this plant reduced cholesterol in test subjects who ate ¼ lb of butter below fasting level!

HEART SYMPTOMS RELIEVED! A *"heart juice"* in this plant seems to stimulate the heart like digitalis, relieving chest pain, headaches, dizziness, shortness of breath, opening clogged blood vessels, preventing them from bursting, increasing circulation throughout the body, dissolving deadly blood clots, soothing inflammation. It activates a substance (gives you 10 times more) said to strengthen weak heart muscles and reduce an enlarged heart in 2 days, according to a Harvard doctor!

STARTLING FACT ABOUT DIABETES! In *Lancet*, the British medical journal for December 29, 1973, two doctors report that this *Miracle Rejuvenation Plant* is as effective as a popular drug in clearing the blood of excess sugar! It reportedly normalizes low blood sugar as well! A man with diabetes and high blood pressure was told his case was incurable, and was sent home to die, at age 60. *At 90 he was still alive, in excellent health! He started eating this plant! His blood sugar dropped from 200+ to 110! He passed the secret along to others, and all reported the same amazing relief!*

BLESSED RELIEF FROM ARTHRITIS!

A French researcher claims 90% effectiveness in treating arthritis with this *Miracle Rejuvenation Plant!* No special diet need be followed, he states, and he finds the plant so penetrating he applies it directly to the skin, in special soaks. Painful attacks of rheumatism, neuralgia, sciatica (leg pain), and gout disappeared says Adams.

A CRIPPLE WALKS AGAIN! Whenever Pete M. tried to stand up he felt excruciating pain in his hip and leg. It felt like the hip was dislocated, as painful as sharp nails. He couldn't put his weight on it or make it move normally. In his leg he felt the high whining pain of phlebitis. With this amazing plant, he was able to walk painlessly once again—and the attacks never returned!

ARTHRITIC FINGERS FREED OF PAIN! Jerome S. couldn't even hold a pencil or dial a phone due to arthritic fingers that were gnarled, swollen and painful. Nothing helped. Drugs made him ill. He even tried cutting out his favorite foods. With this plant he found immediate relief. Swelling and pain vanished! He regained his iron grip!

SPINE AND SHOULDERS RELIEVED! Jane A. developed painful arthritis at the base of her spine that made it impossible to sit. She could no longer bend to do housework or straighten up—she had to be pulled to a standing position. Then she developed agonizing bursitis of the shoulders and couldn't move! With the

NEW HAIR GROWTH!

While doctors violently object that male-pattern baldness is completely incurable–there are astounding reports of new hair growth with power-packed Miracle Medicine Foods! In a major breakthrough male-pattern baldness has been almost 100% cured! Men losing nearly 500 hairs a day had fallout reduced to as little as 25 (TWICE that is normal). One man reports his hairline restored as much as 2 inches in front in a few weeks.

LUXURIOUS HAIR GROWTH! A middle-aged man was totally bald. The baldness extended deep back, with just a gray fringe around the edges, and looked completely hopeless—it had been this way for 20 years. He began eating Miracle Medicine Foods. In 2 weeks, dark hair started coming in! In a little over a month, most of the back and top had started filling in!

BALD SPOTS FILLED IN! "Several years ago I noticed ...my hair was receding right over the forehead in an embarrassing 'V'—and around the sides the hair was almost all gone. (There was a bald spot in back.) The rest of my hair was quite gray." With a Miracle Medicine Food: "I simply rubbed it on.... After a few weeks, my forehead and temples were filling in! By summer the bald patch had grown in again! ...I noticed dark roots all over." L.O.

CATARACTS AND WRINKLES VANISH! Even in advanced age your appearance can fool the calendar! A leading researcher says that in people 40-70 skin became smooth in a week with Miracle Medicine Foods. With another Miracle Medicine Food, epileptic attacks stopped; advanced cataracts, including those of a patient totally blind who could not see light–disappeared!

"FOR SEEMINGLY HOPELESS CASES, THIS BOOK OFFERS MIRACULOUS NEW HOPE!"

"In minutes...even seconds these foods have relieved great agony, avoided surgery, and cured the incurable in so many cases..."

SPECTACULAR PAIN RELIEF!

You'll see how a man who was horribly scalded from head to foot by boiling water–with terrible pain that nearly drove him mad–got immediate, instant and complete relief with a Miracle Medicine Food! Instantly the pain stopped, he slept all night, and didn't lose a single hair. His doctor couldn't believe it!

All claims and experiences cited in this advertising are from Rex Adam's book. No cancer cure is claimed and the reader is cautioned to seek qualified medical help whenever needed.

PROGRESS BOOKS, LTD.

juice of this amazing plant her spine became free, her shoulder pain vanished, and she moved easily!

SOOTHES STOMACH AND DIGESTION!

This plant is reported 95% effective in healing digestive upset. It brought not just temporary but permanent relief, in many cases. It has an almost narcotic-like effect in soothing the system. It relieved cramps and spasms. It contains 529 mg. of a laxative which has relieved constipation minutes after it was taken. In cases of diarrhea, it has worked miracles in stopping even the extreme diarrhea of dysentary. Nearly 100% of ulcer patients were cured testing a substance it activates!

SENILITY, TREMBLING, PARALYSIS AND OLD AGE SYMPTOMS REVERSED! Among users, the most striking effect was on the skin of the face, throat, arms and hands: the skin became smooth, taut and young-looking, lines and age spots faded away! A man nearing 70 suffering senile loss of memory regained his quick, sharp mind! Another whose hands shook violently became steady and calm. A woman with heart symptoms and paralysis was given this plant to eat; her heart symptoms subsided, and in a short time she got up and walked, says Adams.

REJUVENATES MALE AND FEMALE GLANDS! *Described as a cure for impotence and an aphrodisiac beyond compare*, when a substance in it was given to men who were short and had the genitals of children, these organs immediately began to grow larger, and one man grew 5 inches taller! In women, the plant is used to relieve inflammation of the uterus and menstrual cramps! A mild form of this plant—used as a popular candy flavoring—contains the female hormone estrogen. A substance it gives in large quantity has completely relieved the almost constant nausea of pregnancy!

AMAZING NEW HELP FOR SKIN AND HAIR! Crow's feet, jowls, double-chin, puffy bags and dark circles under the eyes have all vanished with this *Miracle Rejuvenation Plant*! Reportedly, the juice of this plant has caused bald spots to fill in and new hair to grow in many cases. In every case, the hair grew in thick, dark and luxurious, regardless of age or sex. Blisters . . . bedsores . . . warts . . . unbearable itching . . . athlete's foot . . . boils . . . insect bites have completely vanished, sometimes *overnight* or in only *minutes*, says Adams.

HOW TO LOSE 20 POUNDS IN 12 DAYS! *This Miracle Rejuvenation Plant* seems to melt off pounds faster than anything else in the world! No calorie counting or willpower is needed! Recently a National Newspaper told how a famous actor uses this plant to lose over a pound a day, or about 10 pounds a week! While making a movie, he used it to lose twenty pounds in twelve days! This method is completely safe, according to a consulting dietician! Thighs, hips, buttocks, neck—all the hard-to-reach areas—seem to slenderize. Even shoe size is reduced!

KIDNEY, BLADDER AND URINARY CONDITIONS CURED!

Around 1900, a doctor found that kidney blockage of long duration and bleeding from any part of the urinary system was quickly halted with a common vegetable tea. Stones and gravel were rapidly dissolved, and did not return! Diseases of the bladder and ureter were cured! It drained away pounds of excess fluid in days—permanently. A heart patient with excess fluid tried it. In 3 weeks, all signs of swelling and dropsy were gone and never returned!

DIABETES AND KIDNEY STONE REPORTED GONE!

A woman with diabetes and a kidney stone was told her sugar was 326 and she needed an operation if the stone didn't move. With this amazing food, she says: "Two weeks later . . . my stone was gone and my sugar count was 128 . . . I no longer had a stone nor diabetes." Diabetics have been permanently cured in 3-4 weeks with this food.

GALL BLADDER ATTACKS STOP!

Very often both gallstones and kidney stones can be "dissolved," says a doctor, with a Miracle Medicine Food you'll discover. He says his daughter was having gall bladder attacks every week, and other doctors recommended surgery to remove it. But since using this Miracle Medicine Food she has had no more attacks in 6 years!

BREAST LUMPS DISAPPEARED!

A woman with breast lumps that would come and go with each menstruation discovered that as soon as she used a Miracle Medicine Food "the pain and swelling would go away immediately."

HEART VICTIM'S EXCESS FLUID DISAPPEARED!

One woman, at 62, couldn't walk across the street without terrible chest pain. Excess fluid was causing a heart problem—and "water pills" made her muscles hurt so much she cried. Then she tried a Miracle Medicine Food for excess fluid. She lost 7-8 lbs in a week! She threw away her pills and can now work, walk miles—hasn't had trouble in 4 years!

"LITTLE STROKES" GONE!

A stroke victim, 80, tried eating the skin of a certain fruit, and says her nausea, dizziness, and tendency toward little strokes are virtually cured!

CONSTIPATION GONE!

"Immediately started having normal bowl movements," says one woman. "Elimination has become a pleasure," says another. No pain, no straining. Elimination has occurred frequently 2-3 times a day!

ABOUT THE AUTHOR

REX ADAMS began his brilliant career as a Medical Research Reporter, after graduating with highest honors from an Eastern preparatory school and the City University of New York. His genius having been recognized early, he was appointed Secretary to the President of a New York Medical Association at the age of 19. At 21, he became Administrative Assistant to the head of a major New York publishing company. At 23, he headed his own literary agency. At 24, he was Executive Vice President of another publishing company. For nearly 15 years, he has been writing and researching in the field of natural and drugless medicine following his own miraculous cure of a near fatal ailment, with Miracle Medicine Foods. Presently engaged as a reporter on nature cures, Mr. Adams' writings have reached millions under many imprints. In this book, he brings much of his earlier work together and shows how Miracle Medicine Foods can bring instant pain-relief for scores of ailments.

3200 Lawson Blvd., Oceanside, N.Y. 11572

You can turn off pain from many ailments just like flicking a switch! Pain will vanish in seconds!

HERE ARE MIRACLE MEDICINE FOODS THAT HAVE RELIEVED OR CURED ALMOST EVERY KNOWN AILMENT!

So safe no prescription is needed—so powerful certain medications have had to be eliminated... under a doctor's care!—says Rex Adams

"THE CURE OF INCURABLE AILMENTS!"

Described here are tough, resistant, hard-to-heal conditions deemed incurable by doctors—cases where all else failed—that Rex Adams reports were completely and permanently cured, or apparently abated, with no sign of return.

- **MULTIPLE SCLEROSIS** has been repeatedly cured in lab animals with a Miracle Medicine Food says Rex Adams. And yet we are constantly told MS is incurable. In one reported case a young doctor was able to halt the progress of his own MS with a Miracle Medicine Food! He quickly saw his symptoms of muscle jerking, tremors and lack of co-ordination disappear for good!
- **MYASTHENIA GRAVIS** has been cured in patients given certain Miracle Medicine Foods, says one scientist. Relief was prompt. Results were "rapid and astonishing." Paralysis disappeared in a few weeks. Yet every day we're told it's incurable!
- **CEREBRAL PALSY!** A 7-year-old boy was suffering from cerebral palsy, which caused spastic paralysis of his arms and legs (wild, jerky movements) and affected his speech. The doctor shook his head: no cure for cerebral palsy. Then someone suggested a Miracle Medicine Food. In a month, his withered muscles firmed up, and he can run and play. Yet every day we're told it's incurable!

INSTANT PAIN RELIEF FOR SCORES OF AILMENTS!

Here are Miracle Medicine Foods, available everywhere, that have relieved great agony, avoided surgery, and cured the incurable . . .

- How a near-blind case of glaucoma regained sight in 9 days!
- How almost 100% cures have been obtained for cataracts, and marked healing occurred even in advanced cases in 24-48 hours!
- How sufferers swear earache stops in about 10 minutes with a Miracle Medicine Food!
- How large kidney stones dissolved, and the formation of new ones ceased immediately with a common fruit juice!
- How an 83-year-old man with knee pain so bad he could barely stand can now run, kick, and jump without any discomfort!
- How a man with advanced spinal arthritis was able to jump out of bed without pain, in 3 days!
- How a man with a slipped disc got it to slip back into place immediately, without exercise, and has been pain-free for 5 years!
- How bursitis sufferers may obtain quick pain relief!
- How a serious cough can be cured in 3-5 minutes!
- How hay fever vanished in seconds!
- How a painful blood clot in the leg may liquify in 24 hours!
- How a gall bladder attack may be relieved almost at once!
- How acute sciatica may vanish in one day!
- How burning and scalding urine may be relieved immediately!
- How diabetics were permanently cured in 3-4 weeks!
- How breast pain may vanish immediately!
- How any kind of back pain can be relieved immediately!
- How leg pain can be relieved in 10 minutes!
- How heartburn, ulcers, and constipation may be relieved quickly!
- How serious burns and skin problems healed before the astonished victim's eyes, in one day, with instant pain relief!

CLAIMS ARTHRITIS CURE!

A woman with terrible arthritic pains in her back and legs read how arthritis can be cured by eating certain delicious foods found in cereals and desserts, with no special diet! In a few days her pain was gone and never returned!

DISC RUPTURES AVOID SURGERY!

A woman was given medical treatment for backache. "Well, the pills were like drinking water and the exercises made it worse," she says. But with a Miracle Medicine Food her pain was gone in 48 hours. One M.D. says pain disappears in 24-48 hours with this Miracle Medicine Food, and that 93% have had dramatic relief and are able to do heavy work. Many with disc lesions were able to avoid surgery! It will eliminate most common back pains, sprains and disc ruptures, he says.

IMPORTANT NOTE:

Many of these Miracle Medicine Foods contain actual ingredients from which pain-relieving miracle medicines are made, says Rex Adams. While not a substitute for qualified medical care - always obtain your doctor's permission before using—and no one can guarantee instant pain relief or cures, they do seem to have worked miracles for many, he says!

LOOSE TEETH TAKE ROOT!

A man, 61, reports he suffered from loose teeth, bleeding gums, and puffiness due to tartar accumulation, even after surgery. With a Miracle Medicine Food he says his gums became so firm his dentist could hardly probe below the gum line!

IMMEDIATE RELIEF FOR BURNING, SCALDING URINE!

A man experienced sudden excruciating attacks of burning and scalding urine, which came upon him in uncontrollable waves of pain. After endless trips to a doctor and flaming hot pain he couldn't stand he tried a Miracle Medicine Food. It cleared up immediately!

BREAST PAIN VANISHED!

A woman suffered very painful breasts 10 days to 2 weeks before each period so sore she couldn't sleep on her stomach. With a Miracle Medicine Food, she says: "I suddenly noticed I was not having all this pain anymore, and told a co-worker with the same problem (who also got relief)."

GANGRENE HEALED!

An elderly woman was admitted to a hospital with gangrene of the foot. Doctors wanted to amputate, but it was decided she could not survive an operation. Instead, her foot was covered with a common syrup! It healed. She walked away completely cured!

DARKENS WHITE HAIR!

- "I had never seen gray hair get back its natural color, but mine did after using (a Miracle Medicine Food)." C.A.
- "My hair was a startling white but now it's doing its darndest to be black again, its original color." J.W.
- "I am 58 and the gray hairs I have had disappeared." Mrs. K.R.
- "Foolishly I (stopped using it) . . . white hairs appeared . . . now I'm back on (it): hair has regained its dark color." J.S.F.

Now an electrifying book called Miracle Medicine Foods gives full details on this Miracle Rejuvenation Plant and many other healing foods that have RELIEVED OR CURED ALMOST EVERY KNOWN AILMENT, says Rex Adams. If just one of them can help you, it is truly a godsend, he says.

You owe it to yourself to try it! Why not send in the No-Risk Coupon TODAY!

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The Common

By Dennis King

The sunflower is a plant of increasing importance, both commercially and as a crop for the gardener and farmsteader. Most of the commercial production in the world is used for making vegetable oil, as sunflower oil is reputed to be of as good quality as the best olive oil. In North America, much of the production is used for wild bird food as well as human food. The by-products of oil production are used for animal feed, and sunflowers were once grown extensively for silage.

The farmsteader can easily adapt many of these sunflower qualities to use on the farmstead and create an aesthetic garden border or patch as well. Sunflowers can be an easily grown and hand-harvested seed crop for both the human and animal occupants of a farmstead. It is very wildly adapted to most cultivated areas of North America, and the world, for that matter.

Commercial Production

Sunflowers have been an important crop in Russia for over 200 years where they grow about 12 million acres annually, about half the world's production. Other important producers are Argentina (three million acres) and Rumania (1.5 million acres). About a million acres are grown in the U.S., mostly in the northern Midwest.

Fat is an extremely important source of energy in human food, especially for northern peoples. It is much easier for the body to produce the heat necessary to live in a northern environment if the diet contains enough fat. Fats also provide many essential vitamins and the types of vitamins vary with types of fat. Most vegetable oils in the world today, i.e., soybean oil, olive oil, and palm oil, are produced most abundantly in southern climates.

Sunflower oil is important in that it is one type of vegetable oil which can be produced in northern climates; where humans generally need more fat in

Sunflower

their diet. (This statement may sound a bit crazy to us over-fat North Americans, but it is also true that many over-developed nations import a lot of vegetable oils from underdeveloped nations. Maybe this is to keep our waistlines over-developed and theirs under-developed.) The importance of fats and oils in the history of agricultural and industrial man is emphasized in a pep speech given to the German people by Field Marshall Goering in the fall of 1942. He promised them more fats for the coming winter from sunflower oil from conquered Russian territory.

Good oil-producing varieties contain about 40 percent fat in their hulled seed and yield around 2000 lbs. of seed per acre. The seeds are generally small and black. For birdseed production, medium-sized seeds are favored. Large seeded varieties are favored for human food production, even though these varieties are often not as high-yielding as those with smaller seeds.

History and Classification

The common sunflower (*Helianthus Annuus*) is a large annual plant native to the North American prairies from Manitoba to Texas and on south. Like many other cultivated plants from North America, it is believed to have been taken to Europe by the Spaniards from Mexico or South America. From Europe, sunflowers were introduced to Asia and then re-introduced to the Americans.

The sunflower genus (*Helianthus*) is a large genus of the composite family. The only other member of the genus cultivated for food is *Helianthus tuberosus*, the Jerusalem Artichoke. The composites are a large group of plants characterized by having many small flowers grouped together to look like a single flower. This arrangement enhances pollination, as a single visit by an insect pollinates several flowers. The ray flowers, or outside flowers, of the sunflower, have only one large

yellow petal. The dish flowers, or central flowers, have no petals. This arrangement is true for the sunflower varieties grown for seed, but there are several ornamental varieties with several rows of ray flowers.

Culture

Sunflowers are adapted to most cultivated soils and climates of North America, and in the world for that matter. Being a native prairie plant, it is quite drought-tolerant, but it can tolerate areas of quite high rainfall. A major limitation for commercial production is damp August and September weather, which prohibits proper field drying. This is why most commercial production is still in the prairies. This, however, does not limit home production except that special measures must be taken to dry the seed if the fall is damp.

Most varieties of sunflowers need at least a 90-day growing season and tests have shown that maturity is faster the further south you go. When the same varieties were planted at several locations from Texas to Manitoba on the same date, the average time to reach the flower stage in Texas was 54 days and in Manitoba 90 days.

Sunflowers can be grown quite far north, however, because the young plants are frost hardy. Up to the time that they have three or four pairs of leaves, the platns can tolerate temperatures in the 20's. After that, they lose their frost hardiness. Sunflowers will also germinate at low soil temperatures, down to 45° F.

In the northern prairies, they are usually planted in May, after small grains, but before corn. You could probably plant sunflowers as early as you plant peas in the garden, but most people plant them somewhere in the period between peas and early sweetcorn. Where growing seasons are longer, sunflowers can be planted much later, as high soil temperatures are no problem for germination. I've planted sunflowers when the soil temperature was 75 or 80 degrees and had no problem with germination.

Seeds are usually planted one to two inches deep, but will germinate well if even deeper. Let soil moisture be your guide to planting depth. If the surface soil is moist, one inch is good. If the soil is dry, you must plant deeper in order that the seeds can absorb enough moisture to germinate.

I've always planted sunflowers in rows about three feet apart and space the plants about one foot apart in the rows. Some people plant in beds with as thick as one by one foot spacing. The yield of sunflowers is about the same over a wide range of spacing but if plants are thick, the heads and seeds are smaller than if the plants are thin. To grow those giant, two foot heads advertised by the seed companies, keep your plants thin, probably a single row with plants at least two feet apart. For maximum yield of large seeds, however, a one by three or 18 inch by 18 inch spacing is probably about right.

Sunflowers are not heavy feeders and do not require a level of fertility as plants like corn. They have not shown any response to chemical fertilization in soils with a high organic matter content and medium levels of phosphorus and potassium. Sunflowers do respond to chemical fertilization on poorer, sandy soils. Manure has always been considered the best sunflower fertilizer and since they do not need high levels of nitrogen, chicken manure would not be recommended. When compared with corn, sunflowers use less nitrogen and phosphorus per acre but more potassium, calcium and magnesium. Sunflowers have a deep tap root and are capable of utilizing potassium in the subsoil. When the stables are worked into the soil, more potassium becomes available in the topsoil.

Sunflowers can be cultivated by whatever method you prefer but should be kept fairly weed free in the early stages. The only period when water is critical is the three week period during flowering and seed development. If it's dry in your area in August, a mulch should help. When I grew sunflowers in Arkansas, my main patch was unmulched, but I also had a single mulch row on the south side of my tomatoes to provide partial shade for the tomatoes. During one very dry August, my main patch did poorly, but the mulched row developed full 18-inch heads. There is evidence, however, that drought conditions during seed growth might only delay maturity and that later rains can revive the plant. Under extremely dry conditions, some of the plants break over about a foot above the ground.

One problem with sunflowers, especially the large varieties, is lodging. If there are high winds when the soil is wet, all your sunflowers might blow over. Even though sunflowers have a tap root, most of their roots are shallow, fibrous roots and won't support the plants well in wet soil. The most practical solution to this problem is hilling, mounding up the soil around the plants at the last cultivation. If you only have a few prized sunflowers, you might go to the trouble to stake them; I never have.

Most diseases of sunflowers are caused by fungi. *Virtiallium* wilt, downy mildew, rust, and *Sclerotinia* stem and head rots are the most important. The best way of effective control is through crop rotation. Sunflowers should not be planted in the same spot for at least four years. Another consideration is that potatoes, beans, and mustard are susceptible to some of the same diseases and should not follow each other. Commercially, corn and small grains are used in rotation with sunflowers. Sunflowers usually occur only every eight years in the crop rotation in Russia.

Cucumbers are said to be a good companion plant with sunflowers, the tall sunflowers providing shade for the cukes. Generally, however, sunflowers do not make a good companion plant. E.L. Rice at the University of Oklahoma has found that sunflowers are allelopathic to many other plants, that is, they produce chemicals that inhibit other plants' growth. They need little nitrogen themselves and their leaves produce substances that inhibit nitrogen fixing bacteria. This makes them poor companions with legumes. I learned this when I had what I thought was a great idea; to grow pole beans on

sunflowers. After reading of this interaction I thought better, but in retrospect, I should have tried it anyway. You know, you can't believe everything you read. Sunflowers and potatoes are also said to do poorly together. Potatoes are more likely to get blight with sunflowers around.

I have never found insects to be any problem with sunflowers, and even with commercial production, crop rotation is the best control. Bees are necessary, however, for cross pollination. I've always noticed a lot of bumble bees pollinating my sunflowers along with a few honey bees. The nectar tubes in many sunflower varieties are quite long and since bumble bees have a longer proboscus than honey bees, they are more successful at getting nectar. It is said that if you are considering sunflowers as a nectar source you should select the right varieties but I could find no reference to which varieties. I have grown the Mammoth Russian variety and it appears that most of the nectar went to the bumble bees.

There are many varieties of sunflowers but most of them are not common and few are made available to small gardeners. The most common large varieties are Mammoth Russian and Gray Stripe. They are both six to 10 feet tall and grow heads up to 20 inches across. They have large seeds and are good for human food. Mingren is also a large seeded variety for human food, and Johnny's Selected Seeds, Albion, Maine, offers a variety called Sundale, which is not as tall as Mammoth, but is earlier maturing and better adapted to northern New England. Peredonik is a Russian variety which is grown for oil, and Gurney's, of Yankton, South Dakota, offers an oil seed variety called Black Stripe. The oil seed varieties make excellent livestock and bird feed.

Bird damage is a major problem with small plots of sunflowers. The severity of the problem is related to the complexity and importance of your solution. Some people simply try to grow enough sunflowers to feed themselves and the wild birds. I've known people who say they grow them for wild bird feed anyway, and if the bluejays eat them all up in the fall, it's their loss if there's none left for the winter.

If the bird problem isn't too severe, strips of aluminum, strings stretched over the patch and scarecrows can do the trick. For very severe problems, nothing less than completely covering the patch with netting will keep the birds out. Bluejays, blackbirds and grackles give the most trouble. When I lived in Arkansas, the sunflowers were always ripe and harvested before the blackbirds arrived. That was nice, but in the north, hungry fall birds usually coincide with the ripening of sunflowers.

Harvest

It is best to let sunflowers dry in the field or garden before harvest. Sunflower seeds do not shatter, or fall out when mature, and if you can let the seed head dry in the field, the seeds will be dry enough to store when picked. Seed moisture must be down to

10 to 12 percent before the seeds will be dry enough to store when picked.

Again, this is why commercial production is in the prairies, where fall drying conditions are good. If you live in a cool, damp fall climate, your problem is more complicated.

The seeds are mature long before the heads are dry and are usually mature about three weeks after the ray flowers fade. At this point, the heads can be cut off and either hung or laid in a well-ventilated shed to dry. If ventilation is not sufficient, the heads will rot and probably spoil the seeds. I once hung several bunches of four or five large sunflower heads in a small, closed shed in Ontario. I forgot about them for two or three weeks, and when I returned, they were a rotten mess. Use care in drying the heads. I've never tried it, but I'd bet one of the new solar dryers could be used to dry seeds if they were removed from the heads in a still moist condition.

After the heads have mostly dried, it is easy to rub off the seeds. Some people rub the heads against half-inch hardware cloth over a barrel or tub. I used to harvest about 600 feet of sunflower row by simply barging the dry heads against the sides of my trailer.

Sunflowers yield somewhere in the neighborhood of 2000 pounds of seed per acre, with high yields possible on very fertile soil. I once got two 55-gallon drums full of seeds from about 600 feet of row. In commercial oil-seed production, yields are about .15 pounds of seed per plant and would translate to about 15 pounds of seed per 100 foot row. I wouldn't be surprised if a home gardener could get double this yield.

Uses

I needn't dwell on sunflower oil production, because at this point, it is impractical for the home producer, but sunflower oil is of very high quality. It is high in linoleic acid and as a result, helps reduce blood cholesterol levels. High linoleic acid content and high oil content is associated with cool temperatures during seed development. This is why northern areas have the edge in oil production. Sunflower oil is a good source of vitamins, B, A, D, E, and F. It is second only to soybean oil as an important source of vegetable oil. The main by-product of oil production is a high protein animal feed supplement, but the meal can be refined into a white flour of 53 percent protein for human food.

A good portion of the U.S. and Canadian production of sunflower seed is used as wild bird food and pet food. Many farmsteaders grow sunflowers for this use also. Human food is one of the best uses of sunflower seeds and consumption has been increasing since the 60's. Sunflower seeds contain 30 percent protein. For homegrown seeds, it is easiest to leave the seeds unhulled and let the eater do the hulling with his or her teeth. There are however methods that can be used for home de-hulling.

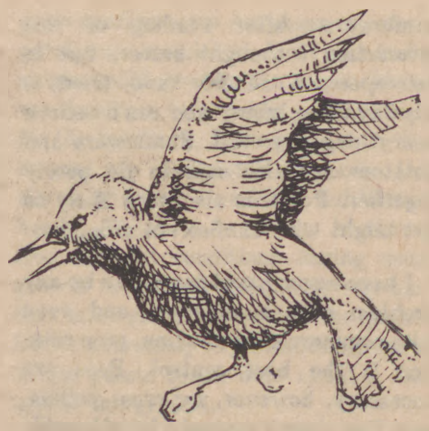
Commercially, seeds are de-hulled with an impact huller. This machine passes the seeds over a roller and throws them at high speed against the outer walls. The impact breaks the seed hull. The same type of machine is used to hull oats, barley and buckwheat. Hand operated models are available but they are quite expensive. There are other methods: not as good, but they'll work in a pinch.

Seeds can be put through a hammermill or hammermill type shredder with all the grates removed. I suppose if a seed is hit just once with a blade or thrown against the wall, and falls out, it is de-hulled. If it's hit twice, it's smashed to smithereens. You do get some good de-hulled seed this way and you can feed the debris to your livestock. Some people run sunflower seeds through a hand grain grinder leaving the plates far enough apart to break the hull, but not smash the seed. I've also heard of people putting a couple of cups of seed in a blender and switching it on and then off rapidly. I'm a bit skeptical about this method, but if I had some un-hulled seeds handy, I'd try it right now. Since I'm a firm believer in do-it-yourself, I'll let you try-it-yourself.

After de-hulling the seeds the hulls can be separated by fanning or flotation. I believe flotation is best. Just put everything in water and the good seeds sink while everything else floats. It is then convenient to roast the seeds to dry them, 15 minutes at 300 degrees, or fry in oil.

My real pet is using sunflower seeds as homegrown animal food. They make excellent chicken food as long as you can remember that unhulled lysine seeds have a high fiber content (about 25 percent) and are low in lysine amino acid. Chickens love them, but are filled up by the fiber and even though the protein content is 17 to 20 percent, they cannot obtain enough of it, especially for egg production. The low lysine must be balanced with other amino acids.

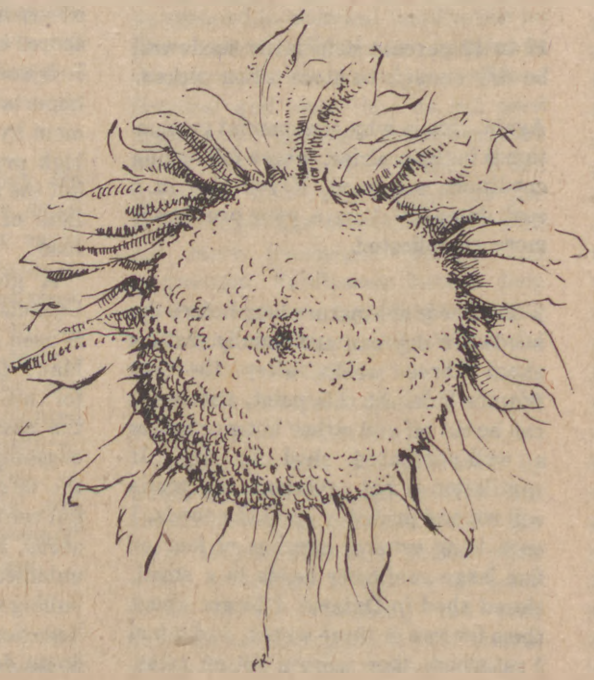
I've seen recommendations to not use un-hulled sunflower seeds as more than 10 percent of chicken's ration. I've tried to be careful, but have probably used a little more than that at times. I've mixed sunflower seeds, corn, cooked soybeans, and sorghum to make a homegrown chicken ration. It all depends on where you live and what you can grow. I've never had enough sunflower seeds to feed to any other livestock, but if you have enough of them, all livestock would eat them.



Sunflowers were once used for silage in the U.S. and Canada and are still used to some extent for that purpose in Europe. Sunflowers yield less than corn, but the silage is higher in protein and is said to be as good as legume silage. I know the young plants are relished by cattle and deer.

Sunflowers also make good compost and green manure. Their primary benefit is that they are able to bring potassium up from the subsoil and make it available to later shallow rooted crops. □

Drawings by Faith Rainbolt.



Let My Chickens Go!

By Hollis Rowan Seamon

It all began when I discovered the injured chicken and brought it into the house and put it in the old baby crib. Or rather, it all began when we were talked into buying the baby chicks. Or maybe when we left college and started farming. Or. . .

Anyway, my husband operates a dairy farm. Let it be understood that I was raised in the very heart of suburbia and never saw a cow until it was my means of livelihood. I tried to be friendly to the farm animals, patting the cows' noses and telling them stories. However, one day I was butted by a particularly boisterous bovine and flew gracefully into the air, landing in a mud puddle which was liberally laced with manure. I now know that those cows are out to get me — after all, they do have a reason to be a bit cranky, kept barefoot, pregnant, *and* milking year after year. So I remain downright scared of cows and deeply suspicious of other barnyard creatures.

Then came the fateful day when a friend offered the Chicken Deal. It seemed innocent enough, a chance to buy some baby chicks for a tiny price. Now, baby chickens are cute, and look harmless, even to me. They also look dumb, and I figured that in a real battle of wits they would be no match. I was wrong. But visions of fresh eggs and the old-time farm wife and her "egg money" prevailed and I acquired 16 hen chicks and all the accompanying paraphernalia. The shed in the back yard became the hen house, complete with fenced-in yard.

Hollis Rowan Seamon is from Kinderhook, New York.

The little chicks grew into lovely black and rust hens. And grew and grew and grew. Eating away, consuming a vast amount of expensive feed, and periodically escaping the fence and requiring chase, capture and re-incarceration. My three and five-year-old sons became expert Chicken Catchers, and so, unfortunately, did our dogs. Many daring rescues ensued, wherein the chickens were snatched from the doggy jaws of death. But nary an egg did we see. There was no reward for our efforts.

We tried the old stone egg trick — putting a stone egg paperweight in their shed to sort of give them the idea and start the old hormones rolling. They pecked it, and finding it inedible, ignored it. There began to be suggestions made that perhaps showing them some fried chicken wings would provide better incentive. Still nothing.

Just as hope was running out and the ax was being sharpened, nature came through and the first egg appeared, lonely and forlorn, in the mud of the chicken yard. Laid and abandoned. But others eventually followed and we were in business. Fresh eggs, about a dozen a day. Those dumb chickens were worth something after all!

The dogs had not forgotten their illicit tastes of feathers, however, and danger lurked everpresent at the chicken fence. One morning I stepped out the back door to gather the eggs and was greeted by a pathetic sight. A beautiful black hen was in the clutches of our four-month-old puppy, who was happily gnawing on its wing. The hen was a mess, and chicken-like, had gone into immediate unresisting shock at the first onslaught. Death seemed imminent, but I did not want the poor creature to die in the dog's mouth, so I brought the chicken into the house and set her near the woodstove to die in warmth and peace. She didn't. She just sat there all day, looking at me with her beady red eyes, as I cooked. Unnerving.

Unwilling to put the hen back in the shed at the mercy of her unfeeling sisters, I ensconced her in the old baby crib in the back bedroom, where she received much tender loving care. Soon, however, a certain effluvium was noticed about the house. It worsened. And worsened. In fact, that chicken stank. And despite our efforts, she would not eat, and generally languished.

Finally, when no one could stand the vapors surrounding the back bedroom any longer, the injured chicken was returned to her shed to take her chances among her own. She promptly died.

Never would I go through that again. So the chickens lost their yard privileges and were relegated to the safety of the shed. Into the shed, to stay, they were locked. I felt incipient revolution brewing when I went to feed them thereafter. They mobbed the door. They pecked my feet. They wanted *out*. Angry cluckings resounded through the walls of the shed. But, I thought, how dangerous can a bunch of chickens be? Let them mutter.

Then I noticed — only three eggs one day, two the next. Unsuspicious, I reasoned that they must just be having some off days, perhaps the cold weather affecting them. The next day — *no* eggs. The hens looked fine, not molting, eating (as usual) everything in sight. Could it be a plan, a conspiracy?! No, of course not, chickens are too dumb. Still. . .

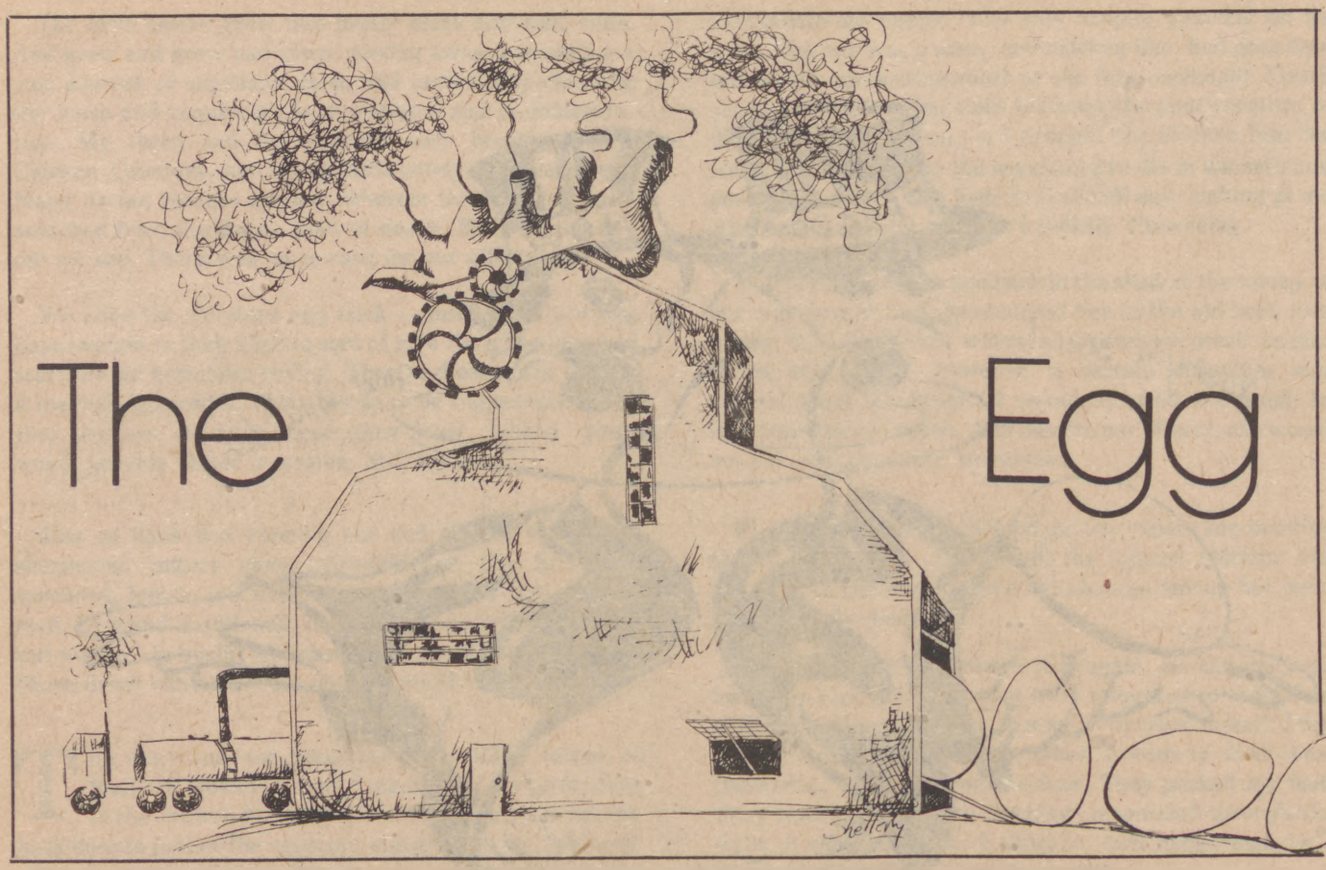
Next day, again no eggs. Now mutterings began to be heard from the family breakfast table. My three-egg-a-day (cholesterol be hanged) husband suggested that we introduce those chickens to Colonel Sanders. My sons ventured to guess that the hens needed the dog chasing exercise in order to help them pop the eggs out. Everyone seemed to be getting a trifle grumpy; it was a case of the oatmeal for breakfast *again* blues.

I tried to reason with the feathered fiends. I explained to them, in the latest medical terminology, that it just was not healthy to go around hoarding eggs. Besides, did they really want to go back out into that treacherous yard? Did they like being mauled by dogs? Wasn't their shed cozy and warm? Would they perhaps like me to hang some calico curtains at the windows?

There was no response to logic; those chickens were just plain unreasonable. When no eggs appeared, for the third day, I realized that I had vastly underestimated the intelligence of those hens. They had organized a stand-up strike and were negotiating for their yard privileges by using the well-known tactic of nonproduction. And there wasn't a strike-breaker in the lot. In the face of such determination, I broke, opened the door and let them out into the light of day.

Next day — *sixteen* eggs, from fifteen chickens!! The crafty rascals had been holding back, no doubt about it. It was blackmail.

Now the chickens have the run of the yard. They have never stopped laying again. They take their chances with the dogs and live free. They are a bit smug about their victory, I think. But they haven't had the last word yet. Just *see* if I ever let one of them sleep in my baby crib again! □



By Lyndon Carew

For most of us, the words we associate with eggs are fried, scrambled, boiled, Benedict, or cracked. But we should also associate the word "factory", because the egg is one of nature's most fantastic assembly plants. In eggs, the biological nuts and bolts and steel, the chemicals known as proteins, lipids, minerals and vitamins, are assembled into a biological vehicle that has wings, legs, eyes and many other components ready for the final test as soon as it leaves the production exit.

The egg is one of the few animal cells that we can see without a microscope. Actually, the yolk is the cell that has been plumped large by the vast quantity of fatty material needed to feed the chick embryo as it develops. The egg white surrounding the yolk is extra protein also there to nourish the embryo. If the hen which produced this cell had never met a rooster, then the egg would remain unfertilized and no embryo would develop.

Dr. Lyndon Carew is a nutritionist at the University of Vermont.

Although birds' eggs vary in size from the tiny hummingbird egg, ½ inch in length and weighing .001 pounds (0.5 grams) to the ostrich egg, 6¾ inches in length and weighing 3.1 pounds (1400 gms.), they are all formed in a similar way. The egg starts its journey in the ovary of the hen as one of several thousand barely visible, whitish-gray, soft spheres. One at a time, these grow over a period of several days to full yolk size and color by the accumulation of fats and yellow pigments. Next time you or a neighbor dress a freshly killed hen for the oven, look carefully at what you remove from inside the abdomen and you will see a dozen or so yolks graded in size from the largest down to several yellow pearl-size ones.

Once a day, the largest yolk is released from the ovary and caught by a funnel-shaped end of a tube known as the oviduct. This tube, 25 inches in length in the chicken hen, makes a circuitous trip through the abdomen and around other organs, and it's a wonder anything gets through. It takes 24 hours in the oviduct for the white, shell membranes and shell to surround the yolk before the completed egg exits at the rear of the chicken. Most, but not all, of the egg white is secreted around the yolk in the first three hours, in the section of the oviduct known as the magnum or albumen-secreting section. This section is about half of the total length of the oviduct. The egg then enters a short section of oviduct known as the isthmus, where the thin, rubbery shell membranes are loosely formed around the white. Then the egg moves on to the latter portion known as the uterus, where it spends most of its time, over 20 hours, while the shell is deposited around the membranes. A very interesting thing happens here though. When the shell is partially formed, the oviduct pumps more egg white past the shell and membranes, into the interior of the egg in order to make it plump.

A hen has the potential for laying an egg every day. Your barnyard hens might lay a few eggs and then stop while they incubate the eggs until the chicks hatch. This desire to brood, however, has been largely bred out of commercial hens. It isn't uncommon to find individual hens in commercial flocks that lay an egg almost every day throughout the year. Good commercial flocks on the

average lay 250 eggs per 365 days. A champion breed of birds is the Khaki-Campbell duck which often outperforms the commercial chicken.

Depending on the types of pigments present in the shell-forming part of the oviduct, egg shells may be splotched or have a variety of colors such as brown or green. Or they may have no pigment at all and appear as white eggs. Hens that lay brown eggs reproduce the exact tint of brown in the eggs day after day. If you have a flock of chickens, by careful observation you can often identify the eggs being laid by a certain hen. But the color of the shell has no relation to the nutritional value of the eggs. White or brown-shell eggs, or for that matter ducks', turkeys' or quails' eggs, are similar in their nutritional value since the object is always the same, to make a chick. The biggest influence might be the food the bird eats, since excess nutrients in the feed sometimes show up in the egg.

Does a hen lay the egg little end or big end first? During the formation of the egg the small end points to the rear of the chicken. This would seem most logical to help the hen ease the egg from its body. But, surprisingly, the egg isn't laid small end first. Shortly before it is laid, the egg rotates through a 180 degree horizontal plane and the big end points toward the exit. This happens in a minute or two, and then less than half an hour later, the egg exits large end first. If you don't believe it, look the next time you get a chance. I don't know if all birds do this, but chickens were x-rayed during the various stages of egg formation to prove this point.

Lots of strange things can happen as an egg is formed. If you raise hens and eat lots of eggs you might see some of these. On rare occasions no yolk is released from the ovary and a yolkless egg is formed. More commonly the hen releases too many yolks at once, and double-yolked eggs are formed. You can often tell when this happens because the eggs are very large. Once I found an egg twice as large as a normal egg. Thinking there might be three or more yolks in it, I candled it and saw a peculiar shadow. To investigate this further I cut a small window in the shell, and inside I found another egg complete with shell. Apparently the hen "forgot" to lay one egg and the next egg caught up with it and surrounded it.

Sometimes the shell manufacturing machinery doesn't work and a soft-shelled egg surrounded only by the membranes is laid by the hen. The rubbery consistency of these eggs is peculiar to feel in your hand, but they can still be eaten.

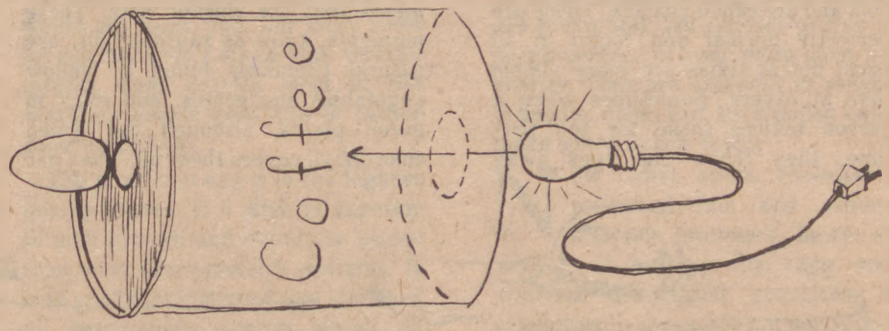
Mistakes in making eggs most often occur when young pullets are just "learning" to lay. But sometimes if hens are frightened, the timing of egg formation is disrupted and you might find soft-shelled eggs or small eggs being laid. I have seen these mistakes occur when hens were scared by dogs or predators, or by loud noises from automobile horns and airplanes.

You might find shells with minor defects such as tiny pimples or an occasional ridge in the smooth shell. This is usually a characteristic of the individual hen. If you find a lot of very rough shells, it might mean your hens have been sick, particularly with one of several respiratory diseases, and the disease has damaged their reproductive system. But it's too late to worry now. By the time you see these eggs the disease has probably passed. Such eggs can be eaten though.

A newly laid egg is sterile inside and if handled properly, will remain this way for some time, even for a few days unrefrigerated. Soiled eggs, wet eggs, and high temperatures favor the entrance of bacteria through pores in the shell into the egg, and these bacteria will then cause the egg to decompose. If you must wash eggs, do it quickly at moderate temperatures (110-125° F) and dry them quickly. Otherwise, the changing temperature will pull bacteria into the eggs. Don't wash eggs if your water is high in iron as this also favors bacterial growth in them.

As eggs age, two principal things happen; moisture evaporates from them, and the egg white becomes watery. Neither of these changes affects the nutritional value, but they do determine whether or not an egg is fresh, and such older eggs are unacceptable to many people. As water evaporates from the egg, air accumulates inside at the large end. This air "cell" can be seen as a shadow if the egg is "candled" or held up to a bright light. You can see this best if the light is forced through a small opening against which the egg is held.

Candlers can be purchased for this purpose from your agricultural supplier, or you can make one from a tin can which has a light bulb inserted at the open end and a hole slightly smaller than the egg (¾ inch) cut in it at the other end. Use the candler in a

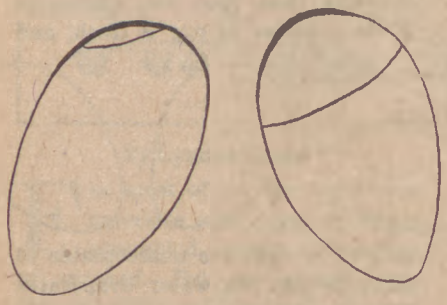


dark room for best results. Even an egg one day old gets some air into it, but as the egg gets older, this air space or air "cell" grows larger. Here is how the U.S. Government judges egg quality based on the air space:

AA Quality	1/8" or less in depth
A Quality	3/16" or less in depth
B Quality	3/8" or less in depth
C Quality	over 3/8" in depth.

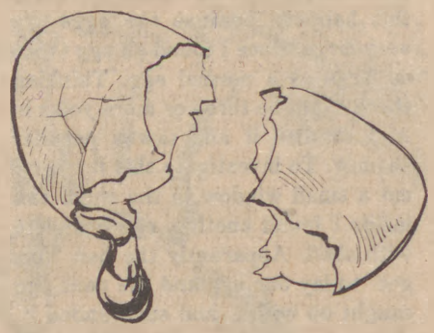
If you break an egg open to fry it, the yolk and white may stand firm and high in the middle of the pan, or the yolk may sit right on the surface of the pan and the watery white spread over much of the surface. The first is a relatively fresh grade AA egg, the other is grade C and quite a few days old.

Now that we have broken the egg open, let's examine it more closely. There are three parts to the egg white; (1) the outer thin layer, (2) the thick white that is next to and propping up the yolk and (3) the third white which is thin also and will flow out if you puncture the thick white with a knife. The third white is the white that is freed as the egg ages or deteriorates, but the same thing can happen if you shake a fresh egg.



AA C

If you look closely at opposite ends of the yolk you should see thick, white strands. These are the twisted ends of the sack that surrounds the yolk and are called chalaza. These are perfectly normal and found in all eggs, but at times are more visible than at others. Sometimes when a person notices these for the first time, they throw the eggs away



assuming that they are bad. When they later call me about this, I have to explain that they discarded perfectly good eggs.

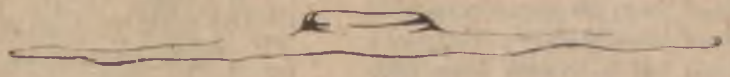
From your own flock you might occasionally find small red blood spots or tan to white meat spots inside the egg. These are rarely found in store eggs because the spots are detected on candling and those eggs are removed. The blood spot is a result of a small hemorrhage in the ovary or oviduct as the egg is formed. Maybe the hen was slightly injured as she ran into a roost or nest to escape a friendly rooster or angry sister. On very rare occasions a lot of blood will appear in the egg. Meat spots are tiny pieces of tissue that broke away from the oviduct. Neither blood spots nor meat spots will harm you, and I would not throw such eggs away. The eggs of brown-shell laying breeds such as the Plymouth Rock or Rhode Island Red which we have in New England are more likely to have these spots than white-shelled eggs.

If you are very sensitive to colors you might notice that not all yolks have the same yellow color. You might even notice that summer eggs have a deeper colored yolk than winter eggs. This has little to do with the nutritional value of the yolk, but depends on the quantity of yellow-orange plant pigments that the chicken eats. These pigments, know as xanthophylls, are natural chemicals found in yellow vegetables and grains, and even in green plants, although the green chlorophyll covers them up. They are the pigments that give trees their bright fall colors when the green chlorophyll disappears from the leaves. These pigments are absorbed from the feed in the digestive tract and later deposited in the yolk. Hens fed a colorless diet made of ingredients such as white cornmeal would eventually produce eggs with colorless "Platinum" yolks—not very appealing. In the winter when hens are fed mashes containing yellow corn and alfalfa meal, or when commercial hens are fed these mashes, the yolks have a medium yellow color. But in the warmer months if you let your hens scavenge they may eat enough grass and other plants to produce a deep orange yolk. In South America, hens are fed orange marigold petals to produce deeply orange-colored yolks that the people there prefer. I lived there several years and found such fried eggs very appealing—particularly two eggs on top of a fried beefsteak which was a popular breakfast item there.

Unless you have a microscope you can't tell if a fresh egg has been fertilized or not. But if you look closely at the surface of a yolk, you will see a small circle about 1/8" in diameter called the germinal disc. If you can't find it, look on the underside of the yolk. All eggs, fertile or not, have this disc. But if the hen had mated and a sperm from the rooster had entered the yolk, it would travel to this disc and the embryo would start to develop here. However, development will never start if the egg is kept below 70°F. The only difference between a fertilized and non-fertile fresh egg is the presence of this single microscopic sperm and perhaps a few cellular divisions which you can't see. There is, therefore, no basis for the belief that fertilized eggs are better for you, and it is money wasted to pay extra for them.

To be sure, if you incubated the fertile egg the area of the germinal disc would grow into a chick embryo. However, most people in the U.S. would not eat such an egg. In some

Grade AA



Grade C

areas of the world such eggs are delicacies. In the Philippines, fertile eggs are incubated for 14 days (the chick hatches at 21 days), then hard-boiled and the embryo is eaten, feathers and all. This dish is known as balut.

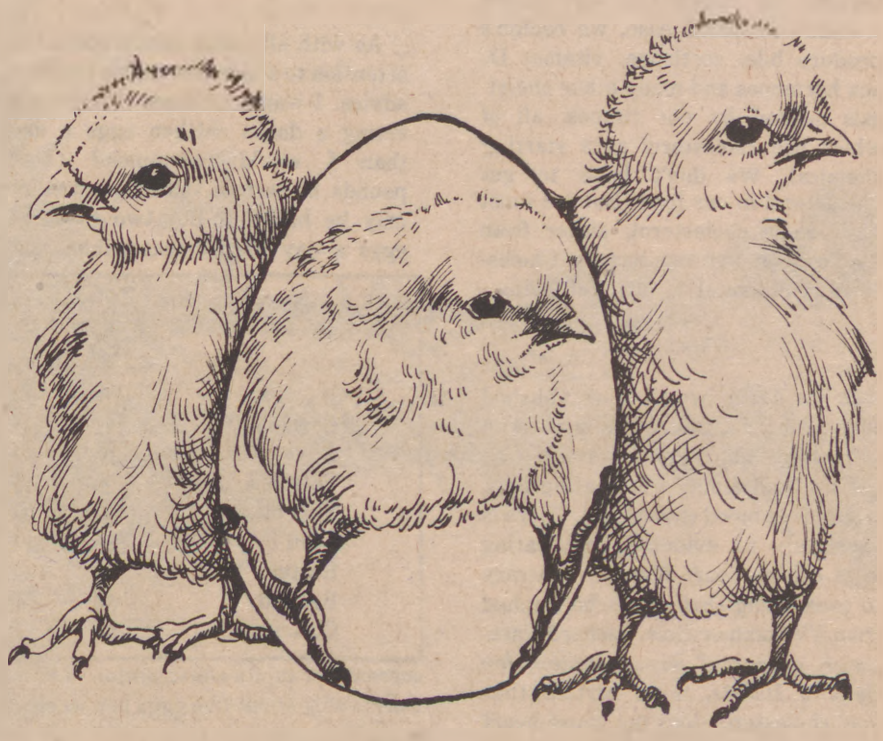
If you are trying to obtain fertile eggs to incubate and hatch chicks, you should recognize that the hen does not have to mate each day to produce such eggs. Although a healthy cock will mate many times a day, a single mating keeps the hen fertile for up to two weeks or longer, although seven to 10 days is the optimum time. The reason for this is that sperm from a single mating travel up the hen's oviduct, and are stored near the starting point in places called "sperm nests". Sperm remain viable in these nests for several days. As soon as a yolk is deposited in the oviduct it is fertilized by the sperm.

Unless you are breeding, the poor male chicken, turkey or duck isn't too important to have around. Hens will lay just as many eggs alone as with the companionship of the opposite sex. This isn't true for all birds, and females of some wild species need a mate present, or at least another bird, in order to lay eggs (sometimes a mirror does the job).

To me, chicken, duck or turkey eggs have distinctive and characteristic flavors. It's a treat to replace a breakfast of chicken eggs with duck or turkey eggs. Occasionally at my house we eat quail eggs produced by Japanese Quail also known as Coturnix. I use these quail in my work to test the nutritional value of poultry feeds. These small ¼ pound birds lay eggs about 1/6 the size of a chicken egg, so our breakfast might consist of bacon, toast and a dozen eggs. Hard-boiled, quail eggs make great hors d'oeurves. I knew a fellow in Venezuela who made a big business out of selling hard-boiled, peeled quail eggs dipped in hot sauce for fiesta days.

Are eggs good for you to eat? If you raise your own hens, you may have wondered if two eggs a day is doing any harm because of all the bad publicity we hear about cholesterol. But first, let's look at the positive side of eating eggs.

An egg has to produce and nourish a new living animal. Therefore, it has to contain all of the minerals, vitamins and proteins needed by that new organism. Nutritionists know that people, and chickens, as well as rats and cats and dogs, and all the other higher animals for that matter, have very similar nutritional needs. You need approximately 45 nutrients in your diet such as calcium, phosphorus, vitamin E and riboflavin. So does a chicken. It follows logically then that an egg must be a pretty good food for people, because it contains all the nutrients a growing chick needs. It can be called one of nature's nutrient pills. It isn't perfect though.



For example birds make their own vitamin C. We don't. Therefore, there isn't much vitamin C in eggs. We also throw away most of the calcium in the egg when we discard the shell. If we ate the egg shell, we would get more than our daily need for calcium from a single egg. Overall though, eggs contain most of the nutrients people need and in rather good quantities.

The protein in egg is of the highest quality known. It is slightly superior to milk protein and definitely better than meat and vegetable proteins. It is so good that it is used as a standard by nutritionists against which all other proteins are compared. Protein quality is often measured in terms of Biological Value. You can think of Biological Value as the efficiency at which protein is used for growth; the higher the quality the better is the efficiency. On a scale of 0-100, here are some of the Biological Values determined for proteins.

Whole egg	98
Milk	92
Beef	78
Rice	75
Fish	73
Soybean flour	71
Whole corn	62
Wheat flour	53
Navy beans	38

Some of the other benefits of eating eggs are that they contain no sugars, so no worries about cavities from them. Also, two eggs, while supplying a substantial quantity of your vitamin, mineral and protein needs, are worth only 150 calories or five to seven percent of your daily need for energy. They are excellent in weight reduction diets, and hard-boiled eggs make great snack foods.

Now, what about cholesterol, saturated fats and atherosclerosis (coronary heart disease)? It is true that egg yolk contains substantial quantities of cholesterol—about 300 mg per yolk—along with the fat soluble vitamins A,

D and E, plus unsaturated and saturated fats. This is much less than the total amount of cholesterol you can handle each day, so two eggs per day in no way overloads the average person's ability to metabolize cholesterol. An important point many people don't realize is that our own body makes substantial quantities of cholesterol each day, principally in the liver. The cholesterol found in the yolk was made in the chicken's liver and transferred through the blood to the ovary. If a person eats cholesterol then his liver will tend to make less cholesterol. Many parts of our body are composed of cholesterol—especially our brain! If we rid our body entirely of cholesterol, our nerves wouldn't function. Also, we couldn't produce bile, cortisone, vitamin D, sex hormones and many other chemicals needed by our tissues, all of which use cholesterol as a starting chemical. We don't have to get cholesterol in our food. But we must have some cholesterol, either from food or from our own tissues. Cholesterol is essential to our well-being.

It has never been well-established that eating natural cholesterol, as in eggs, affects blood cholesterol levels, nor that refraining from eating eggs will reduce blood cholesterol. There is absolutely no evidence that eating eggs causes heart disease, contrary to everything that might be implied from TV commericials. Richard Passwater, author of *Supernutrition for Healthy Hearts*, is so certain that food cholesterol does not cause heart disease, that he has offered to give all the proceeds from his book to the American Heart Association if they can definitely show that dietary cholesterol is a causative factor in heart disease.

In many but not all people who develop the fatty plaques of atherosclerosis in their coronary (heart) arteries, their level of blood cholesterol is high. Nobody knows exactly where "high" begins, but it may be somewhere in the range of 250-300 mg. per 100 ml. of blood. Perhaps five to ten percent of the U.S. population, mostly men, have high blood cholesterol levels. Children, and women in their premenopausal reproductive years have few problems with blood cholesterol.

In the 1960's, Dr. Mark Hegstedt at Harvard University and others reported that eating one to two chicken eggs per day would increase blood cholesterol by 10 to 20 percent. Whether this change is of any health importance has never been established. Recently, however, Drs. Roslyn Alfin-Slater of UCLA and Margaret Flynn of the University of Minnesota reported that men who eat two chicken eggs per day show no change in their blood cholesterol levels. The controversy thus rages.

As with all foods, moderation and attention to a balanced diet is prudent advice. I would no more recommend eating a dozen chicken eggs a day than I would recommend three pounds of carrots, although neither may be harmful. But two to three eggs a day seems reasonable. Our current per capita consumption in the U.S. is only about five eggs per week.

Since some people do have high blood cholesterol levels, everyone should have their blood cholesterol measured by a physician. If it is normal, then moderate levels of dietary cholesterol are of no concern. If it is very high, then methods should be employed to reduce the cholesterol. Hopefully your physician is knowledgeable enough to suggest the appropriate changes in smoking habits, body weight, and exercise as well as food intake, to bring this about. High blood cholesterol is a symtom of a problem much like the symptoms that occur in other diseases such as diabetes, in which blood sugar is high. But because some people have a problem, why should we treat the whole population for it? We don't tell everyone not to eat sugar just because some have diabetes, and I don't think everyone should stop eating eggs. Cigarette smoking, lack of exercise, overeating and eating saturated fats contribute more to high blood cholesterol than does eating cholesterol (which is also found in liver and certain shellfish). We would do well to be more concerned about these other factors than with the eggs we eat.

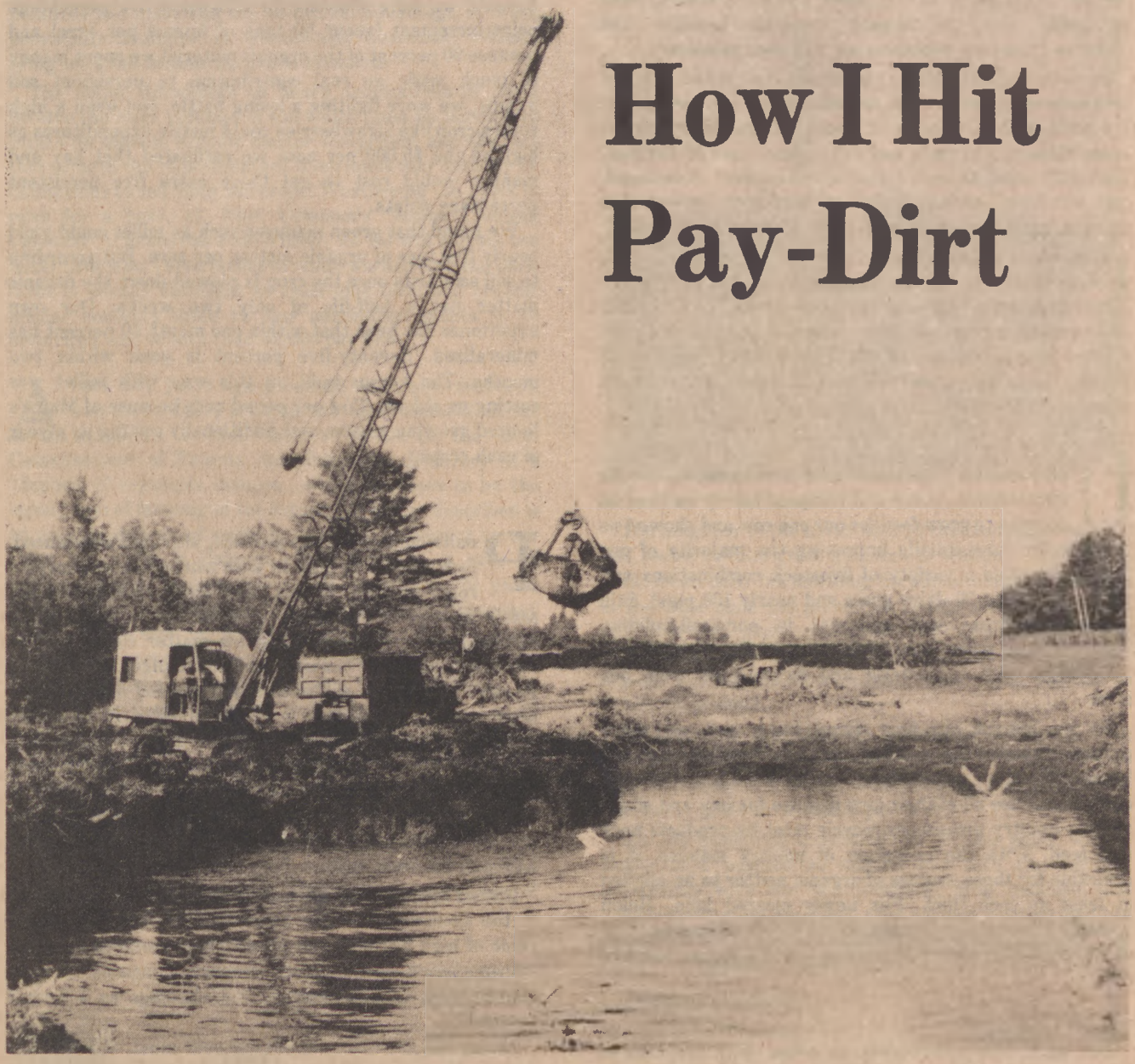
Two more myths about eggs and heart disease need to be dealt with. First, yolk fat, although an animal fat, is not tremendously high in saturated fat as some say. Yolk fat (it really should be called yolk oil) actually is high in unsaturated fats and has fair quantities of polyunsaturated fat compared to some vegetable oils. (represented below as fatty acids).

	Total Saturated Fat	Total Unsaturated Fat	Polyunsaturated Fat
	%	%	%
Corn oil	12	88	50
Olive oil	10	90	7
Cottonseed oil	25	75	50
Yolk oil	33	67	13
Lard	38	62	12
Butter	56	44	4
Beef fat	53	47	2
Coconut oil	91	9	3

The second myth is that certain eggs have no cholesterol. You might have heard this about fertile eggs, ducks' eggs or the blue-shelled eggs of the Auracana breed of chicken. Actually, all have about the same content of cholesterol per unit weight of yolk as do standard chicken eggs.

Eggs are both a biological wonder for the chicks they produce, and a nutritional powerhouse. They are all they are cracked up to be. □

How I Hit Pay-Dirt



By Mark Katz

Down the road a piece to the north the neighbors raised 14 children. To our south the nearest neighbors are in the next county and have only eight. Cheri and I are parturient with our second and plan to stop at two—well, maybe three.

Now, the curious thing is that of these three farms the most prolific is the least fertile. Although topography, drainage, field size and soil types appear nearly identical as one proceeds along this mile of ridge, the differences in field growth and garden crops is unmistakable. The primary reason for the outstanding yields and quality on one piece of ground, while another nearby suffers varying degrees of crop failure, is no simple matter; it is, rather, organic matter. Humus, to be more precise.

One hundred and fifty years ago the fields on all three farms were still in forest and the surface layer was thick with leaf mold. By the turn of the century the fields were lined with stonewalls, and a rock layer of decayed and decaying vegetable material was all but gone. Erosion, leaching, mineralization and farming practices were making the loamy acid till effete.

By the time the Sputnik launching demonstrated man's first potential for a limited independence from his earth, these three farms had each reverted to puckerbrush, hardhack and sorrel. Not until after man had landed on the moon was any interest shown in returning these sandy loam farms to a measure of productivity, and by that time nearly 5000 tons of compostable organic matter was going to be required, using conventional materials, to initially build the soil structure and to provide good water and fertility retention.

Each percentage point increment in humus content requires nearly 10 tons per acre of highly decayed organic matter. In the early '70's our farm, and many others, were struggling with the largest materials handling and resource inventory problems we had ever pondered.

In our central Maine location the initial list of prospective organic matter sources looked very promising. We were within 10 miles of poultry farms, dairy farms, horse stables, a sawmill and a thousand acres of hayland. Within 20 miles, there were potential sources of seaweed, cull potatoes, municipal sludge, municipal leaves each autumn, and meat processing plant by-products.

Moreover, our own fields, once cleared and manured, were already capable of producing several tons of green manure per acre. With access to stale bread, spoiled milk, and purchased grain, we were even able to support a cow, several hogs and goats, a draft horse, rabbits, and a small poultry flock, adding an additional 40 tons of manure each year to our inventory.

Unfortunately, the combined accumulation of our farmstead manures and compost barely sufficed to allow us to grow feed for our one cow and showed no promise for substantially improving the majority of our fields. We tried a variety of livestock combinations and herd sizes (up to 20 dairy goats and nearly 100 pigs). Still no real progress was apparent in our soil-building program—we were only able to provide maintenance treatments with the wastes and by-products from our farm.

So we bought our first dump truck and set about collecting spoiled hay, poultry, manure, woodshavings and leaves. The other materials on our list were not available; dairy farms use all of their own manure for hay and silage and the poultry processors recycle most by-products back into feed. With the exception of poultry manure, it is desirable for these sources of organic matter to be applied at least an inch thick. For newly cleared land, Helen Nearing (*Farmstead*, Spring, 1976) has described her use of "three or four inches of sawdust...and a foot or more of hay."

For each acre one wishes to cover with an inch of shavings about 20 cubic yards (or 25 cords) are required, and in most New England locations it will cost between $120 and $250 to truck that amount from the nearest mill. Mulch hay at a conservative 30¢ per bale can be applied at the rate of approximately 600 bales per acre to get the same inch of coverage at a cost including trucking of about $250. Approximately $50 per acre is a reasonable allowance for spreading the material uniformly on a field.

Six hundred bales of hay represents at best 12 tons of dry organic matter (approximately 24,000 pounds) at a cost of approximately 1¼¢ per pound. Because at least 75 percent of this organic matter will mineralize within the first year, the actual cost of the hay's humus contribution can be expected to run nearly 5¢ per pound of persistent humus. Most manures have an even shorter half-life than a mature hay mulch and even when available free for the hauling, their cost per pound of humus will generally be comparable to that of hay.

It wasn't long before the cost-benefit ratio of each of these amendments began to rule out their continued use. Because we were shooting for at least a five percentage point increment (about 50 tons of humus per acre) and because 90 percent of the organic material we spent money to truck made no real contribution to persistent soil humus, we were fighting a losing battle. Not even a high return crop like strawberries could justify expenditures as high as the $5,000 per acre we estimated that hay and manure would cost to get those extra five persistent percentage points.

We found that green manures such as millet could yield nearly five tons of organic matter per acre. But according to soil scientists once the crop is plowed-down the organic matter has a half-life of only two weeks. Our own experience has been that within one month 50 percent has mineralized. Seventy-five percent is gone within two months. The humus built up this way with millet was costing us at least 2½¢ per pound and, because of Maine's limited growing season, was additionally costing us a year of cash crops.

Poultry manure is an excellent, although unbalanced, fertilizer. It is high in both nitrogen and phosphorous. So high, in fact, that fresh manure can not safely be used in quantities large enough to make major adjustments in stable soil organic matter contents. The non-point pollution hazards and the danger of creating massive imbalances and excesses in the soil nutrient load argue against application in excess of 10 to 15 tons (dry weight) per acre (such applications represent nearly four times the rate of Nitrogen used by corn growers using highly soluble commercial fertilizers and are certainly an "upper limit."). Even with these high rates, poultry manure will at best build soil humus content by only about 0.25 percent each year.

Rotted manure may be applied at higher rates but only at the sacrifice of major nutrients. Without the added value of high nitrogen and phosphorous contents to offset transportation costs, rotted manure compares in cost-effectiveness to hay, leaves, and shavings as a humus source.

Maine has abundant supplies of peat moss, the partially humified remains of hypnum and sphagnum mosses. Peat moss has the advantage over the other amendments of providing organic colloids in a form that is extremely persistent. Unfortunately, the tremendous bulk of the common peat mosses makes transporting great volumes prohibitively expensive; 10 tons of peat moss occupies a volume of nearly 70 cubic yards. The common retail price of about $25 per cubic yard of peat moss reflects the costs of transportation.

Another highly persistent form of organic matter which is widely distributed throughout the state is swamp muck. Most Maine mucks range from 10 to 30 percent organic matter, are extremely acid, low in fertilizer nutrients and frequently have a foul odor. Deposits commonly range from a few inches to six or more feet in depth.

Assuming that these muck soils could be mined and transported at about the same cost as loam (this is unlikely though, in that swamps present poor working conditions

much of the year) the cost of persistent organic matter might run as low as 3¢ per pound. This figure is slightly lower than the corresponding cost with most green manures and muck has the additional advantage of being potentially available in tremendous quantities without tying up a full season for green manures.

The major drawbacks to heavy applications of muck involve the huge volumes of soil which must be handled to utilize its modest organic matter component and the fact that some of the constituents of fresh muck may actually be deleterious to soil biota and crops. Weathering the muck in piles for a year, cf. Eliot Coleman's "Maine Planting Calendar" (*Farmstead* Fall-Winter, 74-75) will correct the latter problem. Three inches of muck worked into the plow layer is usually sufficient to raise long-term soil organic matter contents three to four percentage points at an estimated cost of less than $2,000 per acre.

About five years ago I located one more source of humus. In 1851, prior to the establishment of the U.S.D.A., a local farmer wrote to the U.S. Commissioner of Patents describing the discovery of a "deposit of vegetable manure...which promises to be the strong arm of farming in the future." What he described is an unusual deposit of sedge-humus peat occurring on our Deer Hill Farm in Palermo. This material, is over 95 percent organic matter, has a half-life of over 20 years (compared to the two-week half-life of green and barnyard manures), is rich in fertilizer nutrients, has a cation exchange capacity of nearly 200 milliequivalents per 100 grams (our Charlton soils run about 10 m.e.s./100 g), is much denser than peat moss, and occurs to a depth of 35 feet. Similar peats occur predominantly in England, Europe and the Soviet Union where they are being used extensively as soil amendments and fertilizer bases. It is a much less expensive source of humus than any other source we've found, being only about 1.5¢ per pound.

Compared to muck, this peat reduces material handling by 75 percent, while providing the additional advantage of increased nutrient levels.

The neighbor to the north with 14 children is retired now and seems to take great pleasure in walking through our fields on an early fall morning. He appears to gaze wistfully at the frost upon the pumpkins. While the weather's hot and sticky, we grow some pretty mean pumpkins on soils now testing very high in all nutrients and having humus organic matter contents ranging from eight percent to nearly 20 percent.

By investing less than 20 percent of our gross crop return for each of five years, we are now at a point where potatoes, squash, cabbage, sweet corn, tomatoes, and even dry beans gross over $2,000 per acre.

It's like gardening in potting soil. At this point, we are finally in a position to sustain our tilth and fertility indefinitely with our own livestock, crop residues, and good conservation practices. Our bargain hunting and the cost of building our soils is without a doubt worth the return—a lifetime of self-sufficiency.

Suggested reading:

Deer Hill Farms, Inc.; *Farm, Orchard, & Garden Growers' Report*, Vol. I, No. 1, 1978.

The Life Sciences and Agriculture Experiment Station, Cooperative Extension Service, Maine Soil and Water Conservation Commission; *Maine Guidelines for Manure and Manure Sludge Disposal on Land*, Mis. Report 142, July 1972.

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Millar, Turk, & Foth. *Fundamentals of Soil Science*. John Wiley & Son, Inc., N.Y., 1958.

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Mark Katz, President of Deer Hill Farms, Inc., lives in Weeks Mills, Maine.

oats

Growing Grains

By Rob Johnston

I began growing grain in 1971. The interest stemmed from my wanting to grow all of the primary foods, not just salads and the vegetables. I was small-scale market gardening with a good friend in Amherst, Massachusetts that spring, and we planted oats and rice, not knowing much of anything about their culture. Needless to say, we didn't harvest a kernel. One of my primary pastimes each season since then has been to learn as much as possible about growing and processing grain.

Rob Johnston, Jr., owner of Johnny's Selected Seeds, an organic seed company in Albion, Maine, is the President of the Maine Organic Farmers and Gardeners Association. Photos by Kent Thurston.

The domestication of fire and the practice of agriculture were important milestones in the evolution of humans. Both of these made possible stationary communities, and hence, in temperate regions, necessitated the storage of food. The world's first plant breeders began domesticating certain wild grasses, and since that time, these cereals have been the principal food of every major civilization. Today principle cereals are various types of rice, wheat, corn, oats, millet, barley, rye, and buckwheat.

Enough history. Everyone interested in a rural, small farm revival, both personally and socially, should consider learning the fundamentals of growing and processing these important crops.

Some Basics

1. Cereal grains are annuals, requiring a year or less from planting to harvest.
2. In temperate regions they are either spring sown (spring grain) or fall sown (winter grain).
3. It is essential that varieties chosen be adopted to the season grown and the general climate.
4. Technically, all grains are seeds of flowering grasses, with the exception of buckwheat.
5. Some types have naked grain (hull-less), others have kernels contained by the hull.
6. Sow spring grain as early as possible in spring, winter grain early enough to put out good growth before winter.

Fertilization Most grains are relatively heavy feeders. While a crop will grow on relatively poor soil, it will grow much better on fertile ground. Most of our upland soils are well-suited if they are not too rocky or poorly drained. Good drainage is important, especially on level areas where wet soil would delay spring planting, or cause winter-kill. Generally, a soil with adequate, balanced major nutrients is good. It's not a good idea to spread manures that are likely to contain weed seeds. Composted manures are better. We have used different animal manures for grain, and all work, especially if they are in such consistency that they can be spread evenly. Little fertilization is necessary if the grain crop follows clover or a well-fertilized row crop.

Planting

Except for rice and corn, seed is sown broadcast, evenly as possible by hand or with a Cyclone crank seeder. Before sowing, the seedbed should be well-prepared, relatively smooth and free of trash. Sow half of the seed in one direction, then perpendicular to assure even coverage. On small plats, cover seed with a rake or tiller. On larger areas, we drive once over the seeded field with a disc harrow. Use of a grain drill is most practical on anything six to eight acres and up. The drill, which plants and covers the seed is a series of single row seeder spouts fed by one hopper.

Care

Normally nothing is done from planting to harvest. Sometimes we'll cruise a field to pull weeds, as weeds make harvest difficult. Since there is really little that can be done with a broadcast crop, this makes care in field preparation and planting extra important.

Seeding in Clover We usually have seeded clover into the grain field. The clover doesn't grow much in the shade of the grain, but after the ripe grain is harvested and taken off, the clover makes good growth. This provides an excellent green manure for the following crop. With spring grains, sow the clover seed at the time the grain is planted. For winter grains, we usually wait until early spring, when the ground is alternately freezing and thawing, so the broadcast seed falls into the little cracks in the soil. Mammoth Red Clover is probably the best sort for this purpose, but Medium Red or White Clover or mixtures can be used. Sow seeds at about eight to 10 pounds per acre.

Running wheat through the thresher

Rob Johnston cradling wheat

Shocks of wheat

Harvest

One year we had the use of a combine harvester, but other than that, we have always cut grain by hand with a scythe and cradle. When cutting by hand, it is best to harvest when kernels are just becoming hard, and most of the green color is gone from the stalks. Let it go longer than this and you risk losing some grain through shattering (kernels falling off the seed heads).

I learned how to use a cradle from an old farmer in Massachusetts who himself had learned from an Irish immigrant around 1910. To cut a field, you work around and around clockwise. Take one cut, keep your left foot planted, step up six inches to a foot with your right foot and take another cut. Then step forward with your right foot again, taking a third cut. As long as you keep your left foot in one place the cradle will carry the straw through the swing to the same pile—nice and neat after a bit of practice. After about the third cut you won't be able to reach for enough to get in another swing, so move up with both feet and repeat the cycle.

Unless you find an antique grain cradle, you'll have to make your own or have it made. Good quality European grass scythes can be bought from Northeast Carry, Postbox 187, Hallowell, ME 04347. To build a cradle, I suggest finding one to copy. I made a cradle by hand, and it is quite successful.

On small plots, it is almost better to harvest with sickles. If you hold the sickle in your right hand, hold the straw to be cut in your left hand. Pull the sickle through the straw just off the ground from left to right (inside to outside). Do not swing the sickle like you would a machete. After the cut you have the cut straw in your left hand which is neatly layed down. Be careful not to hold your left hand too low on the straw when making the cut, or you might cut your fingers, as I once did.

One person mowing will keep at least two others busy binding the straw into "sheaves". Take about a six to 10 inch diameter bundle of straw and tie it with a "string" of five or ten straws together. I can't describe here how to make the knot. The longer the straw, the bigger you can make the sheaves, and the easier they are to bind, so be sure to mow close to the ground. After sheaves are made, about a dozen of them are leaned together to form the "shocks". It helps to fan out the bottoms of the sheaves somewhat so they will stand easier.

A well-made shock should be quite sturdy, but it is a good idea to check daily during windy weather.

In the shocks, the grain fully ripens and dries. This takes from three days to two weeks, depending on the weather. When the kernels are quite hard and the straw dry, it's time for threshing.

Threshing

Of all the steps in grain growing, this is the one where it's nice to have a machine. I have used a flail to thresh grain and it is definitely long work. If you are planning to flail your grain, bring the sheaves under cover if possible to get the straw and seed heads as dry as can be before flailing.

wheat

We use a small "CeCoCo" stationary thresher from Japan that we bought new in 1974 for about $1,100.00. The cost is justifiable, as we use it to thresh our vegetable seed and bean crops, as well as grain. But if a thousand bucks sounds high, the domestic small threshers run four times that and on up. A good bet is to try to locate an old relic stationary thresher, which can usually be had for under $400.00 in good shape. To power our thresher we use a small tractor, but a 7 HP or so gasoline engine can be used. Incidentally, I checked with CeCoCo before writing this article, and their threshers had not gone up in price. Their address is CeCoCo, Chua Boeki Goshi Kaisha, Postbox 8, Ibaraki City, Osaka Prefecture, 567 Japan.

Winnowing

After grain is threshed, it must be winnowed to remove any chaff, straw, or dirt that may remain. Old, small, hand-crank screening-fanning mills (winnowing machines) can be found in good or repairable condition for under $50. These machines screen out material larger and smaller than the grain, and fan out light material like chaff. If you don't want to go to this expense, you can toss grain from a large basket in a breeze, or pour grain from one container to another.

Storage

Keep grain in a cool, dry place in well-tied bags. The area where grain is stored should be kept well-cleaned in order to be able to notice any rodent activity. Small quantities can be stored in steel trash cans with lids.

Wheat

People I talk to are usually most interested in growing wheat. There are many types of both spring and winter wheat. The main types grown in this country are as follows:

1. Hard Red (spring and winter): These are the bread wheats of commerce, the primary types grown in the plains, the ones General Mills uses the most of, and the ones the Russians want most from our farmers in the "wheat deals".

2. Soft Red Winter: The traditional European bread wheat. Starchier and lower in gluten than hard wheats. Grown primarily in the Midwest.

3. Soft White Winter: For pastry. The starchiest type. Raised in the Northeast.

4. Club Wheat (spring and winter): Normally grown irrigated in the Pacific Coast states.

5. Durham: The hardest and most glutenous for pasta. Milled Durham wheat is commonly called Semolina.

After trying out several of these types, I think that the winter wheats are best suited to our climate. They yield higher than spring wheat, have much less of a weed problem, and ripen in July or August when weather is most conducive to a good harvest. Early September is the best time to plant. Wheat "tillers", or branches produce several stalks from one seed. You want the wheat to tiller well before the ground freezes and halts its growth. Delaying planting until later in the month doesn't leave enough time for good tillering. Use a standard height (tall) wheat variety if you plan to hand harvest, as short straw is difficult to bind, and doesn't make good shocks. Wheat kernels thresh free of the husks, so what you see is what you eat. Be sure to hold back enough seed for the next planting.

Oats

The only type adapted to the North is spring oats. Oats are very hardy, like cool weather, and should be sown as early as possible in the spring. They grow quickly, and anyone who has seen a big oat field remembers the unique bluish color of the plants.

Oats will grow on a wide variety of soils, and the largest crops are usually grown on a heavier soil.

Oats are harvested like wheat. Most of the recently bred varieties are very short, and are somewhat difficult to harvest. This is not a major factor, but a consideration.

Threshed oat kernels are surrounded by a husk, which must be removed before human consumption. When we bought our thresher from Japan, we also bought a hand powered huller which we use to hull oats, rice, and sunflowers. It should also work on millet. It works by throwing the grain at high speed against a large, thick rubber ring, the friction hulling the seed. Then we separate the kernels from the hulls by winnowing. This machine is a miniature of the impact hullers that are used by Quaker Oats and others to hull oats and sunflowers.

A few years ago, I corresponded with an agricultural college in Scotland, (where else?) trying to find how oats were hulled before modern impact hullers were invented. I learned that oats were hulled in the home with a small hand mill called a "quern", and were hulled commercially in special grist mills. That's all the information I can get without going to Scotland and digging around.

Millet

There are several types of millet. Most people have never heard of eating it, and only have seen it in wild birdfood mixes. "Proso" millet is the type grown for eating. We first grew it in 1972, and found it quite easy. However, it requires a light, well-drained location.

Since millet likes warm weather and soil, delay planting until late May or early June. It is a short season crop and will mature in late August or September. Millet does not usually grow over two or two-and-a-half feet tall; it may be easiest to hand cut when dead ripe and thresh immediately without shocking.

The seed has a thin, shiny hull which must be removed before eating. We have not tried our huller on millet (see "oats") but feel that it would work. I have not researched old-time hulling methods.

Barley

Spring sown barley is the only type feasible for areas with severe winters, although winter barley is grown into Pennsylvania and New York. The plant is very beautiful, with bright green leaves and bowing, yellowish heads. Barley is more picky about soil than oats, as sandier, better drained soils grow the best barley.

Threshed, common barley has a strongly attached hull, which even penetrates the kernel somewhat at the crease. A special mill is needed to remove this hull. The normal "pearling" process grinds off kernel enough to remove the "interior" piece of hull, hence wasting much of the kernel. Some natural foods suppliers sell "hulled" or "peeled" barley, which only has the outer hull removed; a healthier product resulting. There are no home-scale mills that I have seen to remove barley hulls.

Barley malt is, of course, made from barley by cooking down sprouted grains.

Rye

There are spring varieties of rye, but to my knowledge they perform poorly, so winter rye is the most common.

Rye is not particular as to soil type. It can be sown well into mid-fall, and is very winter hardy —hardier than wheat. It ripens grain in mid-summer, and on fertile soil will grow six or seven feet tall, making it a dream to mow by hand. The threshed grain is hulless, ready for cooking and baking. Rye has beautiful straw and plenty of it —great as a weed-free mulch and a big bonus if you keep livestock and use bedding.

Rice

Rice is the big nut to crack. At least for me it is, because we eat it regularly. I grew rice on an experimental scale with some success in New Hampshire and Massachusetts. I have yet to try in Maine, but am cautiously hopeful.

The basic problems center around the plant's natural need for adequate available moisture and warm weather during pollination, which occurs in August. Cool and/or dry periods cause the formation of empty kernels, a process called "rice panicle blasting". We planted rice in shallow furrows to retain rainwater, but could do nothing about cool weather.

It is my feeling that rice could be a realistic homestead crop in our northern areas in less than 10 years with serious varietal and cultural research.

Grain	Soil preferred	When to plant	Sowing rate [lbs./acre]	Harvest/ period	Average Yield [Bushels/ Acre]	Good Yield [Bushels/ Acre]	Lbs./ Bushel	Kernels Naked or Hulled
Spring Wheat	Strong loams	Early Spring	130-170	Sept.	20	35	60	N
Winter Wheat	Strong loams	Early Sept.	90-140	Late July Early August	30	50	60	N
Oats	Clay loam	Earliest Spring	90-110	Aug.-Sept	40	75	32	H
Millet	Sandy, well-drained	Early June	20-30	Sept.	20	35	50	H
Barley	Well-drained	Spring	100-140	Aug.-Sept	25	65	50	H
Rye	None	Early, mid-Fall	90-120	Early Aug.	25	50	56	N
Buckwheat	None	Early, mid-June	50-65	Sept., or after frost	?	?	48	H
Rice	Clay, silt	Late May	?	Late Sept.	?	?	?	H

Buckwheat

Buckwheat is technically a broadleaf herb, not a grass, but it is often termed a cereal because of its use. Most gardeners know of the plant's attributes as a green manure, but few raise it to harvest the large, dark brown, triangular seeds.

Buckwheat, like millet, requires warm soil, and planting should be delayed until June. Growth is very rapid, the beautiful mass of white blooms appearing about 40-50 days after planting. It will grow, and, in fact, should be grown on less fertile soils, and not sown too thickly to prevent lodging (stalks falling over).

Buckwheat is often difficult to cure when cut green, and hence is often harvested after fall frost kills the plant. After mowing, it is not bundled but raked into small piles, and these piles "rolled" daily until dry. Do this with a pitchfork or rake.

You can make buckwheat flour quite easily with a hand grain mill. The dark brown hulls, which are retained by the kernels during threshing, do not grind, and can be separated out with a flour sifter.

Getting whole, hulled kernels ("groats") is difficult, something we have been unable to accomplish well.

Corn

Corn should be mentioned here, being the only cereal native to the Americans. Corn growing is a special topic all its own. Simply put, if you know how to grow sweet corn, you know nearly everything about growing corn for grain. Information on corn growing is readily available.

One interesting note,—about half of the cultivated acreage in the U.S. is devoted to corn, and about half of that corn is fed to hogs. Translated, about a quarter of the good, tilled farmland in the country is used to supply Mom, Dad, and the kids with their bacon and ham. □

Wheat

Building a Log-End Home

By Robert Roy

A building idea coming back into vogue today, after decades of dormancy, is that of log-end construction—also known as stovewood, stackwood, or cordwood masonry—that type of building where very short logs are laid up in a wall like a rank of firewood. Books and articles have appeared during the last year describing various techniques and points of view regarding log-end building. In this article, I hope to consolidate and clarify this information, so that you can better determine if building with log-ends is a method you should consider. Clearly, I cannot deal with the subject of stovewood masonry comprehensively within the confines of a magazine article. Such matters as design, finding and drying log-ends, foundation considerations, various mortar mix alternatives, the actual laying up of log-ends (and insulation), special features possible, the inclusion of windows and doors, and so forth, are all too important to pass over quickly. Therefore, I will confine myself to the general alternatives available to the would-be owner-builder, so that he (or *she*—log-end construction is extremely well-suited to the single lady) may have a clearer idea of the advantages and disadvantages of stovewood masonry. If your appetite is whetted, you should obtain more comprehensive literature on the subject. See bibliography at the end of this article.

Robert L. Roy, author of How to Build Log End Houses, [reviewed in Farmstead's Book Review Section], has employed log-ends in two houses so far. Illustrations by Marie Cyburt Taluba; photos by the author.

There are three widely differing ways in which log-end masonry can be employed in building. They are (1) Within a post and beam framework, (2) As free-standing, load-supporting walls, and (3) Within a strong log or log-end framework. I will deal with these separately.

1. Log-end masonry within a post and beam framework

This is the method with which I am most familiar and the one which I advise, provided you have access to dry timbers. I don't believe I am biased towards this method simply because it is the one I used for my own house. It really seems to me to be the strongest way to go, and I believe in building to last. Builders in our area have looked at the framework of Log End Cottage, while shaking their heads. They say they've never seen a frame so strong. In fact, some have called our cottage "overbuilt", but this

term puzzles me. Is a house overbuilt because it lasts three hundred years instead of a single lifetime?

Jaki and I were ready to build in the spring of 1975. We'd decided on log-end construction because we liked its unusual appearance and—more importantly—we'd had a week's experience helping to build a log cabin and found that we simply weren't strong enough to heft logs of sufficient size to provide the necessary insulation for Upstate New York. The only trouble with building a log-end home was that we were clueless as to where to start; we could find no literature on stovewood masonry. So we headed for Canada's Ottawa Valley to see what we could learn firsthand. One of the several log-end structures we came upon there was a large barn built in 1956. The stovewood walls were ten inches thick. The two by sixes used as door and window framing hardly qualified as a post and beam framework. The log-end walls were load-supporting, and a heavy load at that! But we could learn little of the construction technique from direct observation, and there was no one around who had worked on the project to tell us anything of the mortar mix employed. Also, the corners were hidden from view because they had been plastered over. A little later that afternoon, we came across a man actually building a barn of log-ends, but he was building within a very strong post and beam framework.

The post and beam framework should do all the load supporting. The log-ends, then, serve as "masonry infilling." Masonry infilling was a common method of building in Elizabethan times in England and is found in old houses all over Europe. Many of these houses are still being lived in after hundreds of years. The advantage of log-ends, as opposed to lath and plaster, is their insulative value. If the mortar joints are also insulated—a must in Northern climes—you can count on about R1 per inch of wall thickness; more if you use cedar. We insulate the mortar by weaving strips of fiberglass in and out between the log-ends, and mortar joint each side.

Jack Henstridge uses styrofoam. The Alberta Oil Sands Environmental Research Program Report describes using wood shavings, to which hydrated lime is added to prevent insect infestation—one shovel of lime per wheelbarrow of shavings. Use what's easiest and best for you. Even a dead air space is better than nothing.

Everyone who builds with log-ends will agree on one point: the importance of using *dry*—not *almost* dry—log-ends. John Otvos, also building in Canada, uses discarded roadside guardrails and old utility poles to assure dry wood. He also builds within a post and beam framework of old barn timbers. (*Harrowsmith*, No. 4)

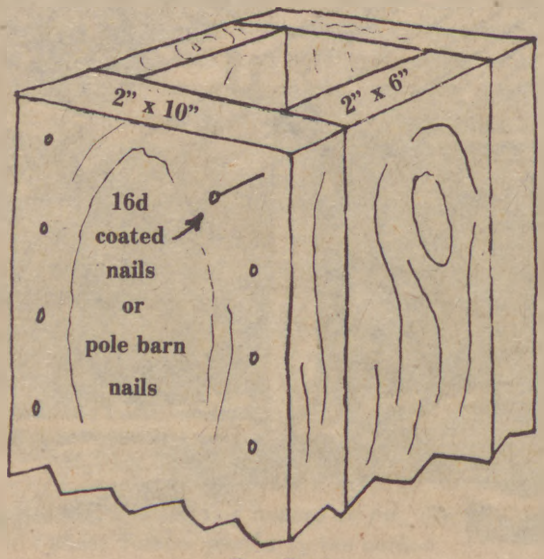
Old barn timbers, if you can get them, are ideal companions to log-ends. They are *dry* and—provided you exercise care in their selection—incredibly strong. Avoid punky or insect-infested beams. Many old timbers have had woodworm in the past, but the worm has long since abandoned the wood when it became too dry for them. No need to fear these, but make doubly sure they're gone,

Post and beam framework

How to insulate with mortar Photo by Dan Jerry

with a little excavation of your own. Judging the structural quality of old barn timbers is an acquired skill, but while you are acquiring it, play safe: if in doubt, don't use it.

Can't find old barn beams, you say? Well, before I would recommend cutting ten-by-tens from your own logs, I would suggest building box posts and beams out of two by tens and two by sixes. Again, get dry material...even if you have to work a horse trade with the sawyer. I've done this, trading green wood for a lesser amount of dry. The trouble with cutting your own large beams is that they take years to dry. With stovewood walls, the posts will shrink away from the masonry. Use barn beams or dry box beams. Or, if you're really planning ahead, cut your own beams and allow a full year's drying for each inch of thickness.



Box Post

Remember that we are not relying on the masonry for strength in this method. This means we can use less mortar per square foot of wall; that is, fill with small log-ends. I now use a mortar mix which I have arrived at through two years of experimenting. It is: 3 sand, 4 sawdust, 1 lime, 1 Portland cement. I use the rough sawdust from a sawmill, as opposed to the fine powder from a cabinet-maker's shop. The sawdust prevents overly fast curing, the major cause of mortar shrinkage and cracking.

I must mention one final point in favor of post and beam construction. In conjunction with masonry infilling, you get a very beautiful effect. The Seven Dwarfs lived in a masonry infilled post and beam cottage. The diagonals add rigidity and beauty, but make your masonry a little trickier. With log-end infilling, they may be unnecessary.

My book, *How To Build Log-End Houses* (see bibliography), deals primarily with stovewood construction within a post and beam framework.

2. Log End Masonry as a Load-supporting Wall

Jack Henstridge is probably the best known exponent of using stovewood masonry as a load-supporting wall. He has written of his experiences in *Building the Cordwood Home.* Jack's home in Oromocto, New Brunswick features curved walls. Of corners, he says, "Who needs square corners? Avoid them like the plague, they are evil—the Boogie Man can catch you there and besides that, they are very difficult to build using this method. Also, by curving the wall you develop lateral strength. To illustrate what I mean—take a piece of writing paper and glue the top to the bottom making a cylinder. Stand it on one open end and put a plate on top, now start piling stuff on the plate. You will be amazed at how much it will hold. The same applies to a wall—curve it and you strengthen it." In the next paragraph Jack advises to go with post and beam construction "if you must have square corners."

I think Jack's advice is sound. I do not consider stovewood masonry to be an inherently strong medium. The bond between mortar and wood is practically non-existent. An open-ended, free-standing wall of log-ends would collapse under much of a weight load. With a large diameter curve, however, the wall is continuous. It cannot collapse towards the ends...there are no "ends".

Jack Henstridge seems to have had a fair degree of success with his house, though he admits that he built with greener wood than he would have liked, necessitating lots of chinking with oakum to keep the walls draft-free. Also, he says that if he were to build the house again, he would use 12-inch instead of nine-inch log-ends.

I talked to Jack in late December and asked him how he views stovewood masonry as a load-supporting medium, now that his house is a few years old. Though he still hadn't put his planned sod roof on the building, Jack didn't hesitate to recommend log-ends for high compression

strength. "The house is doin' just fine," he says. "Remember, though, that I rely on the mortar matrix for the strength, not any bond between wood and mortar." And Jack uses a strong mortar: 20 sand, 5 lime, 3 Portland cement. Also, it is clear from pictures I have seen of Jack's house that he uses at least twice as much mortar per square foot of wall than I use, but I am not relying on stovewood masonry for strength.

So, log-ends *can* be used in a load-supporting wall. Use plenty of strong limey mortar, dry log-ends, and curved walls at least 12 inches thick (or use the method described in the third part of this article). If I were going to tackle this style—and I'm seriously thinking about it—I would go with 16 inch log-ends for greater strength and insulation.

One question which arises is how to fasten roof rafters to a round wall of log-ends. One possible solution would be to cast a double ring of reinforced concrete on top of the log-ends when the wall is within six inches of rafter height. Set anchor bolts—one in each ring—at each place around the wall where rafters are to be fastened. When the concrete is hard, bolt a two-by-four piece (length equal to the width of your wall) at each pair of bolts. Rafters can be nailed to these pieces. The reinforced concrete rings prevent outward forces on the wall. The rings transfer all the force vectors to vertical lines.

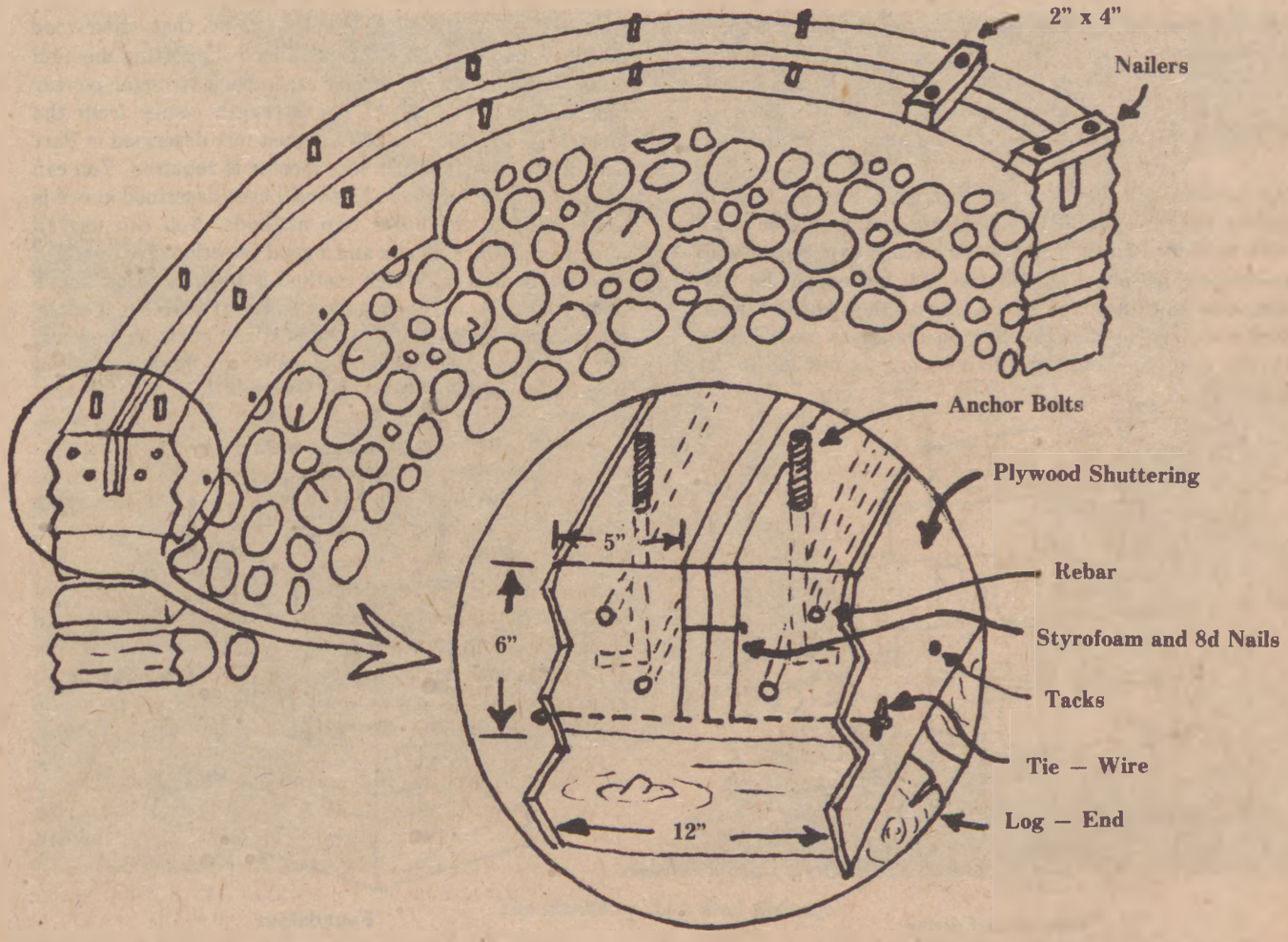
Shutter the rings with ¼" plywood in and out and wired together, as in the slipform method of stonewall building. Two inches of styrofoam (for insulation) divides the pour into two rings. The cross-section of each ring, then, is 6" by 5" on a 12" wall, 6" by 7" on a 16" wall. Every couple of feet you can tack your plywood to the log-end wall to keep it in place until you pour. When you pour, the pressure will be outward on the shuttering. The wire will hold it together. Use a good quality wire every 16 inches at least. Reinforce your rings with rebar, old silo hoops, or old cable, if you can find it. The wire, of course, is left permanently in the wall.

Two-inch styrofoam is tough to bend and will battle to regain its shape, so use two pieces of one-inch styrofoam instead, tacking it together every few inches with eight-penny nails. The nails will hold the pieces to the correct curvature.

Get a cement mixer, if you haven't already been using one with your stovewood masonry. You will need 1.5 cubic yards of concrete for a 12" wall of 32' outside diameter, 2.1 cubic yards for a 16" wall. Such a one-story structure has 707 square feet of internal living space with 12" walls, 676 square feet with 16" walls.

I believe that capping a round wall with reinforced concrete rings would greatly strengthen the whole structure by (1) distributing the roof load evenly on all points of the wall and (2) resisting outward pressure from the rafters.

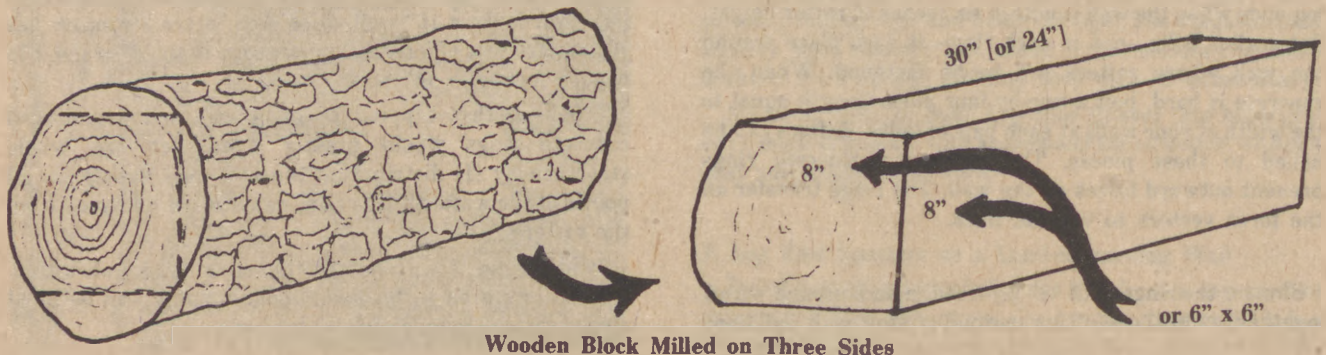
Incidentally, the spaces between rafters, always a troublesome area with conventional building, can be filled nicely with—you guessed it—log-ends.



3. Log-ends within a strong log or log-end framework

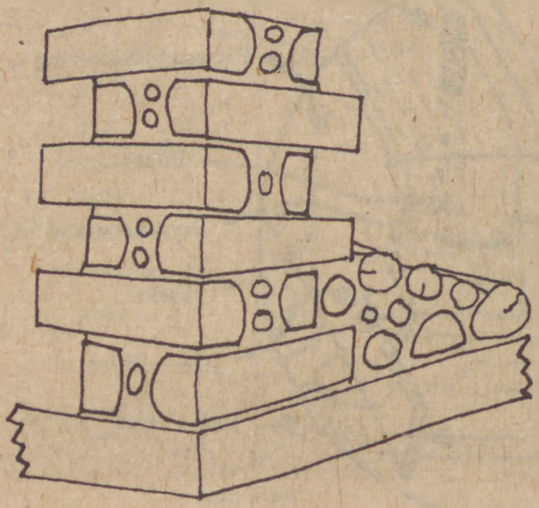
This is a method for which I have a lot of respect. Its purpose is midway between methods One and Two described above; the advantage of a strong framework is supplemented by the compression strength of stovewood masonry. But the technique is different from both of the other two styles. In this method, the corners are built first and the walls are filled in later. This order enables the builder to use the corners as a place to clip a mason's line to make it easier to keep the walls plumb. The best description I have seen of this technique is in a report by the Alberta Oil Sands Environmental Research Program, kindly sent to me by Jack Henstridge. For a copy of the report, write directly to A.O.S.E.R.P. (See bibliography.)

Briefly, here's how it's done. The corners are constructed of wooden blocks milled on three sides of the log. Mill your logs at any convenient length and cut them into short blocks later. The A.O.S.E.R.P. people milled to an eight by eight dimension, and cut the blocks to a length of 30 inches. But their walls are 24 inches thick to withstand the severe winters of Northern Alberta.



Wooden Block Milled on Three Sides

My recommendation for the Northern States, barring Alaska and International Falls, Minnesota, would be to go with a 16-inch thick wall. Based on my experience with stovewood masonry, I consider 16 inches to be the minimum thickness for a load-supporting log-end wall. Such a wall would offer excellent insulation as well. With a 16-inch wall, you could mill to a six by six dimension, 24 inches long.

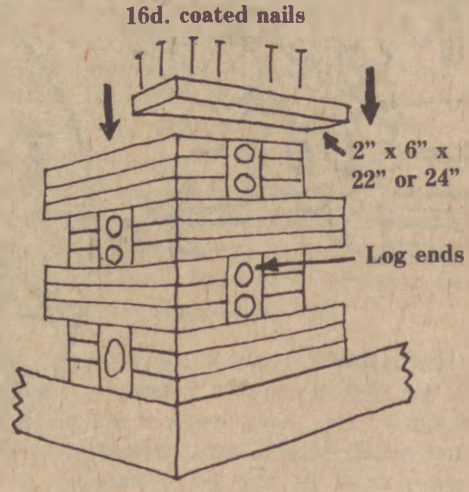


Foundation Corner

The A.O.S.E.R.P. people mortared their corners using the same mortar mix as for the rest of the construction, that is: 5 sand, 2 cement, 1 lime. They used logs which had been "cut and piled for approximately three years." I would not recommend mortaring the corners unless the corner blocks are well aged. Two alternatives: make "beam ends" out of—yes—old barn beams, or spike the log block corners together with 10-inch spikes, as many log cabin builders are doing nowadays. (Note: creosote externally exposed barn beams. It gives a pleasing contrast to the stovewood masonry and it will preserve the timbers darned near forever. Caution: use *stain* indoors; you would never get rid of the obnoxious smell of the creosote.)

Still no barn beams? Then here's a third alternative. Scrounge some old two by sixes and build a corner as shown. Use Sixteen penny nails. Again, creosote the outside.

Summation. It should be kept in mind that stovewood masonry may be used either as a load-supporting medium or as "infilling." In the former case, use a stronger mortar mix and lots more of it. The strength comes from the mortar. As infilling, use the sawdust mix described in Part One of this article. Much less mortar is required. You can use lots of little log-ends. Method Three described above is a marriage of the other two methods. You can use an intermediate mortar mix and a good selection of log-ends of random diameters. Which method is best for you? That's up to your personal preference and the available materials. From experience, I endorse the post and beam framework. For a thicker wall or for curved walls, you might try one of the other methods.



Foundation

I will be glad to answer questions personally if you can't find the answers in the available literature. Send a stamped self-addressed envelope to:

Robert L. Roy
Log End Cottage
R.R. 1, Box 40-C
West Chazy, N.Y. 12992

Happy stacking!

To help the reader decide if stovewood masonry is something he should consider *at all*, here are some pros and cons. (Reprinted from *How To Build Log End Houses* by kind permission from the publisher.)

Pro's

1. In my (biased) opinion, there is no more beautiful wall than one of stovewood masonry. This method combines the interest of a stone wall with the warmth of wood. And there's no interior decorating!
2. Except for the framework, there is no heavy lifting as in stonework and traditional log cabins. One person can do the work alone, although a helper makes it go a whole lot faster.
3. Cedar is an excellent insulator, but insulate your mortar for a year-round home in northern climes.
4. Cedar resists rot and insects, so your walls should last for a long time, especially if you overhang your roof a couple of feet.
5. Trees and deadwood which would be of no use with other types of building might be just fine for stovewood masonry.
6. Stovewood masonry is inexpensive, especially if you consider the saving on insulation.
7. It is creative.
8. It is fun.

Con's

1. Stovewood masonry is a lot of exacting meticulous work.
2. It takes more time, especially in the preparations, than most other methods, but less than free-form stone masonry.
3. Your cedar should be dried for at least six months under optimum conditions before laying it up.
4. There's little room for error. Careful attention must be paid to detail. Take time to do it right.

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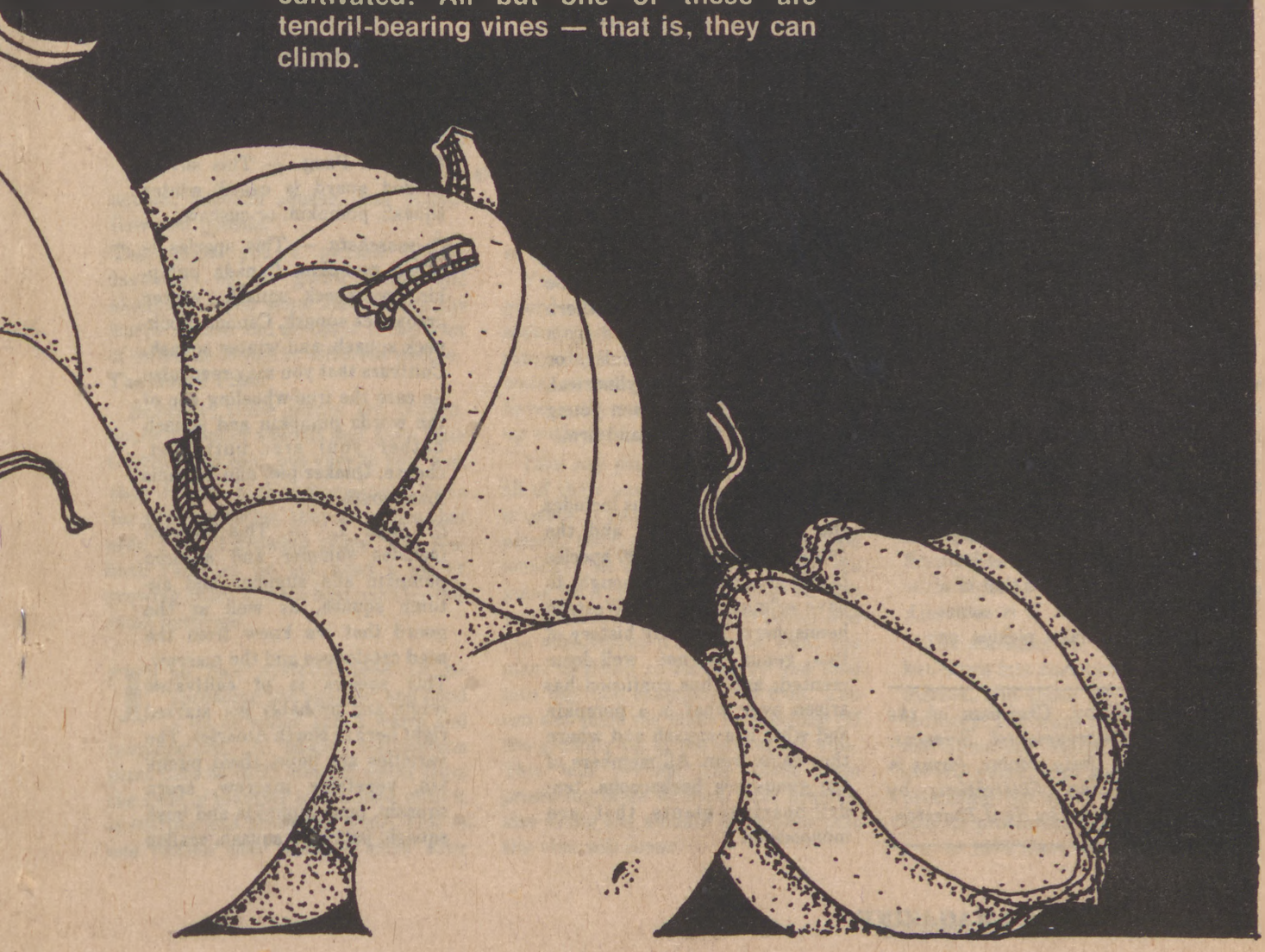
The Sauna at Log End Cottage

The Truth About Cucumbers, Melons and Squash

Squashes, pumpkins, and all the other members of the Gourd or Cucurbitaceae family are worth the effort it takes to grow, harvest and store them. They are a good bet nutritionally, particularly in vitamin A, and you can grow them where you would not normally grow other things. Though some members of the family are shrubs; only herbaceous tender annuals are cultivated. All but one of these are tendril-bearing vines — that is, they can climb.



by Louis Wilcox, Jr.

There has been much confusion historically as to what should be called a squash, or a pumpkin, or a gourd. Today we include the following horticultural plants in this family: cucumbers, muskmelon, winter squash, summer squash, pumpkin, and watermelon. You will immediately say this list is not complete! And historically, it's not. Some squash are called pumpkins and at times, it almost seemed as if the two were fighting for recognition in the world of horticulture. Most of this is because different groups of people have different names for the same plant.

Here is how it all shakes out:

Cucumis L. There are 23 species in this genera that originated in Africa and Southern Asia.

C. anguria — West Indian Gherkin (also Bur Gherkin, Gooseberry Gourd, Bur Cucumber). It is grown for pickles and as a curiosity, primarily in the West Indies. Note that the common "gherkin" grown in many home gardens is simply an immature cucumber.

C. Melo — This species is thought to be of West African origin. There are about seven cultivated races or groups of this species. All of these races are apparently interfertile (can interbreed). The groups or races are:

Cantalupensis group — This is the true cantaloupe, and it is rarely grown in the United States. It has a medium-sized fruit with a hard rind; and rough, warty, or scaly outside. It is not netted like the muskmelon we grow here. What we commonly call the cantaloupe is in the Reticulatus group listed below.

Chito group — primarily an ornamental group called mango melon or orange melon. The fruit is yellow or orange like that of a lemon or an orange. It is sometimes used to make pickles or preserves.

Conomon group — This group is rarely grown in the United States. It is called the oriental pickling melon.

Duckim group — These are called the pomegranate melon or Queen Anne's pocket melon. The plants are small and produce an orange sized fruit with flattened ends. It is very fragrant, but little used in the United States.

Flexosus group — These are grown as a curiosity and are known as the Snake Melon because the fruit is one-and-a-half to three feet long, three inches thick, and curves or coils as it grows, making it look like a snake.

Indorus group — Called the winter melon, honeydew melon, or casaba melon. The fruit is large, strongly scented, and has a thick white or green flesh. The honeydew comes with a smooth rind and the casaba has a wrinkled rind.

Reticulatus group — These are what we call "cantaloupe", but this is really the muskmelon — which is also called netted melon, nutmeg melon, Persian melon. This is the most important commercial melon and has a medium to large-sized fruit which is strongly netted on the outside of the rind. The flesh is generally a shade of orange.

C. sativus L. This is the cucumber, cool as it can be. The cucumber originated in southern Asia and is characterized by a fruit that can be globular, or oblong, or short and cylindrical. The fruit is prickly when young and the flesh is white and firm.

Cucurbita L. This genus includes the squash, pumpkin, and the gourd. There are over 20 species in this genus which is thought to have originated in the Western hemisphere. The early history of this genus is not well-documented, and thus confusion has arisen over what is a pumpkin and what is a squash and where they came from. All members of the genus are herbaceous, tendril-bearing plants that are monoecious.

C. maxima — This is the species that includes most of the varieties known as autumn and winter squash and pumpkins. The cultivars in this genus are listed below with comments on the fruits that they produce.

Banana — Produces fruit that starts out gray and becomes creamy-pink. They are cylindrical, up to 20 inches long and six inches in diameter with an orange-yellow flesh.

Blue Hubbard — The fruit have a blue-gray cast. They can reach 15 inches long and 12 inches in diameter.

Buttercup — The fruit have a dull, dark green cast and are drum shaped. They are about five inches long and eight inches in diameter.

Hubbard — The fruit have a deep dull-green color with pale green stripes, and are about 15 inches long and 10 inches in diameter.

Mammouth — The fruit is orange with paler stripes and gets to be 18 inches long.

Turbaniformis — This is the turban squash which has orange and green fruits with the turban on the top.

C. mixta Pang. — This silver-seeded gourd is called winter squash, pumpkin, or cushaw.

C. moschata — This species is called pumpkin, Canada pumpkin, crookneck squash, winter crookneck squash, Canada crookneck squash, and winter squash. Cultivars that you may recognize (in case the free-wheeling use of the words pumpkin and squash bother you) are: butternut, cheese, Quaker pie, and Virginia mammouth.

C. Pepo L. — This species includes summer and autumn pumpkin and summer and autumn squash, as well as the gourd that we know from the seed catalogues and the marrow. This species is of cultivated origin and probably got started right here in North America. The varieties are pepo, (field pumpkin, vegetable marrow, acorn squash), bush pumpkin and bush squash, pattypan squash, scallop

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Dr. Louis Wilcox, Chairman of the Center of Environmental Sciences, Unity College, Unity, Maine, farms in Thorndike, Maine. Illustrations by Letitia Baer. Photos by Kent Thurston.

Mature gourds have a wide variety of shapes, sizes and colors.

squash, zucchini squash, and yellow-flowered gourds.

That gives you a picture of the taxonomy of the gourd family and should give you some idea of why the words squash and pumpkin mean a lot of different things to different people.

The Gourd Plant

Basically, these plants are tendril-bearing, tender annuals that have little tolerance for cold, but vary in how well they do with high temperatures. Save for a few varieties, they are vines that need a lot of growing space. The few bush varieties do not need a lot of growing space and are best used by the small gardener.

The root systems tend to be spreading and shallow, and need a lot of water and a warm soil temperature. A single watermelon plant uses 85 to 90 liters of water from the time of planting in the field until it is mature and producing fruit. This is one reason that mulches work very well on gourd plants — they maintain a higher soil temperature and retain a lot of moisture in the soil.

You may have noticed while growing gourd plants that their leaves always seem to wilt during the day, except on rainy days. This is due to the high water requirement that these plants have — the root systems cannot keep up with the demand for water.

Like any plant, the gourds will put all of their energy into the fruit they produce. If you leave all the fruit on the plants, they will distribute the food amongst all the fruit. So, if you are going for a record fruit, recognize that you must remove all but one flower and the subsequent fruit if you want the plant to pump all its energy and food into that one championship fruit. You can also limit the plant by pinching off the growing tip at the end of the vine. This will prevent the plant from producing more flowers. This practice also limits the amount of ground that the vine will cover.

The most important thing to remember about these plants is that they use a lot of water and grow rapidly. You want a moist soil that has a lot of nutrients in it.

The Cucumber

The cucumber is thought to be native to Asia and Africa. It evidently has been cultivated in western Asia for at least 3,000 years. It was known to the Greeks and Romans who introduced it to Europe. The cucumber has been cultivated in North America since the first settlements. It now ranks as one of the 20 most important truck crops in America.

The statistics on cucumbers is broken down into cucumbers for the fresh market, and those for the processing industry. The fresh market production has remained stable over the past several years, with about 49,000 acres producing 5,079,000 pounds. Production for processing has been increasing and in 1976 there were 128,475 acres

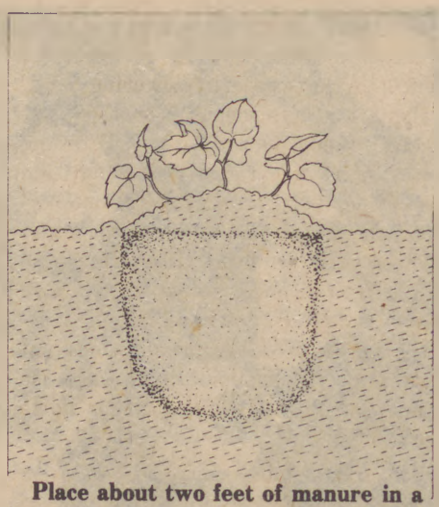
that produced 633,680 tons. A lot of pickles!

The cucumber is a warm season crop and will be killed by even a light freeze, but since it has a relatively short growing season, it is grown in most sections of the United States. Depending upon the climactic location, they can be grown directly from seed or from transplants in pots where the roots will not be disturbed during transplanting.

Basically, cucumbers can be grown on most any type of soil, but your success will vary with the soil type. If you want an early crop, they will do fine on a sandy soil since this crop will not require water throughout the summer. But, if you want a later crop, you need to plant on a more clayey soil where there will be abundant water throughout the growing season. Cucumbers prefer an acid soil, but the pH should be kept above 5.5.

The soil should have a high organic matter content, both in terms of water retention and in terms of cation exchange capacity. It is an old practice to place manure in the soil where you plan to plant cucumbers. In fact, in the 1930's, there was a debate in Ohio as to how much manure should be added to the soil, versus the use of commercial fertilizers. The practice there was to place manure in a trench under the area where the cucumbers would be planted. This practice was slowly replaced with the use of commercial fertilizers and crop rotation. But, for the gardener and small farmer who has access to cow or horse manure, this is still a good practice. I usually place about two feet of manure in a hole and then put four inches of soil over it. This gives the cucumbers a good shot of nitrogen and also provides a soil environment that will retain a lot of water.

There are probably as many ways to grow cucumbers as there are gardeners in the Northeast. The standard methods are to plant them in rows or hills. In rows, the plants are placed six to 12 inches apart in rows that are five to six feet apart. This consumes a lot of garden space. You might try putting your rows in between your peas just before the peas are to come out, and let the cucumbers take over the pea space after the peas are gone. Just make sure that the peas



Place about two feet of manure in a hole and then put four inches of soil over it.

do not shade them too badly when they are getting started.

Planting cucumbers on hills usually means two to three plants per hill, where the hills are spaced every two feet. You do not necessarily have to take the word "hill" literally. Though traditionally, a hill is just what it means—a hump of ground — you do not have to hill the ground up. In fact, if your soil is not good at holding water or if you're short on rain, it is not a good idea to plant the cucumbers up on a hill. They will have a harder time getting water than if you plant them down on level ground.

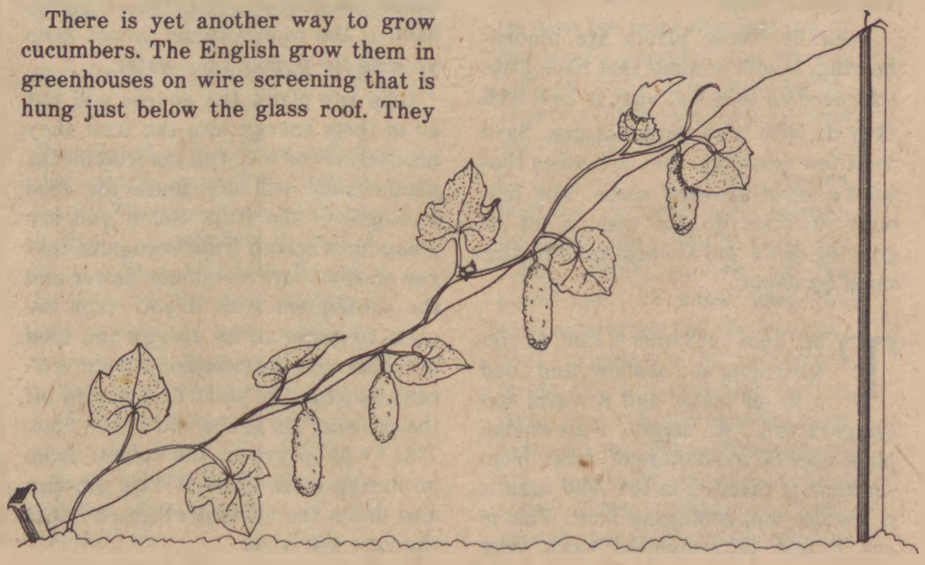
You might also consider some channeling in water around the plants. When you water or when it rains, the channels will conduct the water to the area where the plants are located and thoroughly soak the soil. Remember, it is better to thoroughly soak the soil rather than just wet the top surface.

There is yet another way to grow cucumbers. The English grow them in greenhouses on wire screening that is hung just below the glass roof. They hang below the wire screening and are easy to pick. The English grow a different variety than we do — a variety that is up to three feet long. Thus, it is easy to see why they grow them this way. You can do the same thing in your garden. Grow the plants up on chicken wire and the fruit will hang down below the wire. This makes for easy picking and also reduces the rotting that is common when the fruit lie on the ground.

If you start your plants indoors, you should start about four weeks before you plan to transplant. The plants should be grown in containers that will not disturb the roots when you transplant. The best are peat pellets or peat pots. You can plant both of these right in the ground. The containers will rot and the roots will come right through them. If you use peat pots, it is advisable to score the outside of the peat pot with a knife so that it will break apart more readily. Also, make sure when putting peat pots in the ground that they are completely covered with soil. If you don't, they will act like a wick and draw a lot of water out of the soil, and it will evaporate.

After transplanting, you have to keep your eyes open for the inevitable attack by the beetles. The beetles usually show up about the time that the cucumber puts out its first true leaf. The beetles will do a job devouring the leaves. You can dust with rotenone at this time.

And, now, back to January...how do you pick which variety of cucumber to grow? There are basically three things to consider: fruit shape, disease resis-



tance, and flowering habit. Under fruit shape, you will also be considering whether you are headed into the pickling business or are just growing them for fresh eating. Though varieties are used interchangeably, basically, a pickling variety of cucumber has a length-to-diameter ratio of three to one and the fresh market cucumber has a ratio of four-to-one. Remember, too, that you can pick fresh market cucumbers when they are young and use them for pickling too.

The cucumber varieties of long standing start out life by producing male flowers. In fact, on the average, the first seven flowers they produce will be male flowers. These are the flowers that produce the pollen necessary to pollinate the female flowers when they are produced. After the average of seven male flowers, the plant starts to produce only female flowers; the ones that develop into the cucumber fruit.

In recent years, plant breeders have come up with two new types of cucumbers, as regards flowering habit. There are gynoecious varieties that produce only female flowers. Development of these varieties was a big boon to the commercial producers, but was not much help to the home gardener. These varieties essentially produce all their fruit at once. So, when you have ripe cucumbers, you have tons of them. The home gardener usually does not want all his cucumbers at once, so these varieties are not good for home production.

Breeders have also come up with parthenocarpic varieties, which do not require pollination to produce fruit. They are used mostly in European greenhouses.

So, pick the variety that makes the most sense for what you want. But, do pay attention to disease-resistance. That said, I would suggest you give lemon cucumbers a try if you have never grown them before. Not a large cucumber, but it has a sweet lemon flavor which is very refreshing on a hot summer day. I would also look into the long Japanese cucumbers if you have never grown them before. They get up to three feet long, but are still fresh and crisp.

The Muskmelon

The muskmelon, or cantaloupe, as many people call it, originated in India. Records indicate that it arrived in the United States in 1609 in Virginia. Thus, it has been grown here since colonial days, but was not produced commercially until about 1890 when the Rocky Ford strain was introduced.

The USDA reports a decrease in muskmelon production from 1959 to 1976. There were 123,850 acres of muskmelons in 1959 and 73,230 in 1976. The harvest over those years went from 12,870,000 pounds to 9,853,000 in the same time period.

Melons ripening in the sun

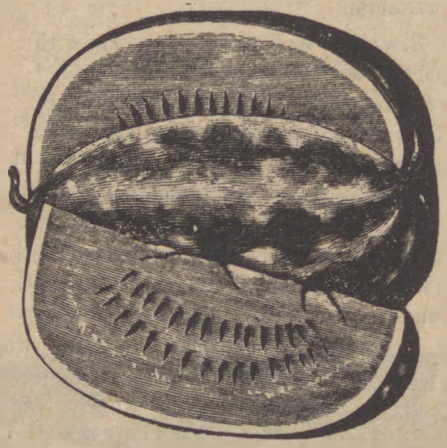
Muskmelons require a long frost-free season. So if you are going to grow them in the northern tier of states, it is a must that you start with transplants. They grow best where there is plenty of sunshine, heat, dry air, and soil moisture. A tall order! Most varieties will take 80 to 100 days to mature.

The soil should be well-drained, a sandy or silty loam being the best. The organic matter should be high and the soil should be fertile. They do best in a slightly acidic soil, pH six to seven. You should rotate muskmelon with other crops so that nematode populations will not build up in the soil. The best rotation crop is a legume since it builds up the nitrogen in the soil.

Muskmelon plants are shallow-rooted just like the cucumber, and the roots will often extend beyond the vines. You must be very careful when weeding. Pull the weed, rather than chopping down deep with a hoe. All this can be avoided if you use a good mulch. Commercially, black plastic is used a great deal. The black plastic keeps the weeds down, of course, and it also keeps the soil warm— a requirement for successful muskmelon growth. In place of black plastic, I have used hay and/or the duff from horses stalls. Organic mulches such as these can be a problem if you have a wet season, for they encourage slugs and also may cause fruit rot.

So, how do you tell when a muskmelon is ripe? It is said that you should pick them at full slip, which means when they are fully ripe. Do not pick them when they are under-ripe and then expect to ripen them in the house. It does not work. There have been many ways offered for telling when a muskmelon is ripe: color of the skin, netting, smell, etc. None of these are infallible and about the best way is the ease with which they can be removed from the vine. If they just about fall away from the vine, they are ripe. But, if you have to pull quite hard, leave them be and let them ripen.

As for varieties, you should first pick ones that are resistant to powdery mildew. Beyond that, it is personal preference and, of course, the selection that has a chance to mature in your climatic area. Some northern, or short season, varieties are coming on the market, and those in the northern climes should investigate these.



Watermelon

Watermelons are thought to be native to Africa. But there is also some thinking that they may have originated in America. In fact, early French explorers found Indians growing them in the Mississippi Valley. They were first cultivated in New England in 1629 and in Florida in 1664.

Like the muskmelon, the watermelon requires a long frost-free growing season. They prefer hot weather and need 80 to 120 days to mature. Most watermelons in America therefore, are grown in the southern states.

Watermelons do best on freshly cleared land that has sandy-loam, and soil rich in humus, fertile, and well-drained. Like all their gourd relatives, it has a shallow root system and the same precautions must be observed when weeding.

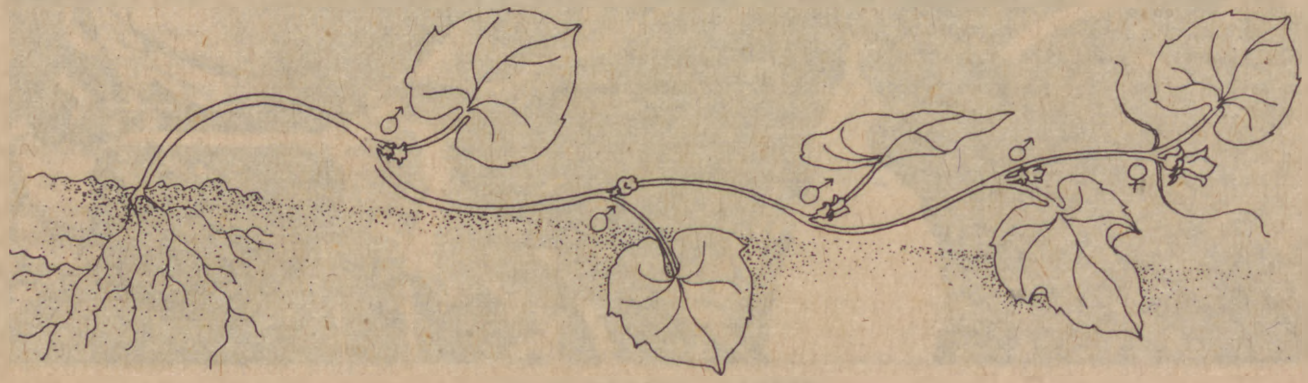
Watermelons should not be harvested until ripe. If harvested early, they will not have developed full color nor full sugar content. But, how do you tell when they are ripe? Again, there are several methods. Some people thump on the outside and listen for the hollow sound. Another way is to note when the tendril next to the fruit dries up. But, this is not foolproof. Yet another way is to observe the color of the part of the melon that is on the ground. When the color changes from pale white to creamy yellow, the melon is ripe.

Varietal selection with melons is a personal choice. But, this choice should also go along with what will make it in your climatic location. There are some varieties that will make it in the northern climes, but remember that watermelons need those hot sunny days. Otherwise, they will not make it even if you have sufficient frost-free days.

Pumpkins and Squash

This is where the naming of members of the gourd family gets the worst. The word "squash" appears to have derived from the American aborigines who occupied the northeastern United States. Apparently, the name was originally applied to the summer squash. The word "pumpkin" was derived from the Greek pepon and the Latin, pepo. It was used to indicate a ripe fruit, but later came to be used to indicate a large fruit.

Both pumpkins and squashes are cultivars of *C. Pepo, C. mixta, C. moschata,* and *C. Maxima.* That's nice, but how do you decide what is what — squash or pumpkin? It all boils down to a matter of usage.



Male flowers develop first along the stem to insure fertilization of the female flowers.

Summer squash are eaten when the fruit is immature, and the fruit is usually prepared by boiling. All summer squash are *Cucurbita Pepo*, but not all *C. Pepo* are summer squash. Summer crookneck squash and zucchini are examples.

Winter squash are ones that are eaten when the fruit is mature, or stored for winter usage. Winter squash is usually baked, rather than boiled.

Now, what of pumpkins? There is no consistent distinction between winter squash and pumpkin. Again, it is a matter of usage. The cultivars that are used for pies, stock feed, and/or jack-o-lanterns are usually called pumpkins. Further, some squash varieties do not store as well as pumpkins.

If you do grow winter squash and plan to store them, forget your root cellar. Root cellars are frequently too damp and too cold. Winter squash must be stored in a cool— not cold— and dry place. They should be stored in a place that has a temperature of 50-60°F. If the temperature is below that, they will suffer chilling injury and subsequent rot. Prior to storing, they should be held at 70-80°F for two to three weeks to cure them. As funny as it may sound, my wife and I have found that our bedroom is the best place to store our winter squash and our pumpkins. It is reasonably dry and the temperature is about 50-55°F. As I write this, we are using our last pumpkin from last summer.

Pumpkins and winter squash are harvested differently than either muskmelons or cucumbers. You should cut the pumpkins and winter squash from the vine, leaving about a two to three inch stalk on the fruit. If you do not leave the stalk on the fruit, the fruit will dry out faster and not store as long.

Now, let's back up and talk of planting pumpkins and winter squash. In most northern areas, it pays to start them indoors. Again, the roots are fragile and should not be disturbed during transplanting. Use either peat pots or peat pellets. Start them about four weeks prior to the time that you can transplant to warm soil and frost-free weather.

Like cucumbers, they do exceptionally well when you put manure under them. I usually dig a hole about two feet in diameter and two feet deep and

fill it with manure. Cover the manure with about four inches of soil and transplant four plants to this hill. I pick the best three plants and let them take off. I often put these hills outside my regular garden in an area where I cannot plant row crops and let them shade out the weed population. Another good method for pumpkins is to plant them in between your rows of corn. This makes weed control difficult in the corn in the early part of the season, but later on, you should not have this problem.

One thing to remember in growing pumpkins and winter squash is that they do best on warm moist soil — just like all members of the gourd family. Manure in the soil helps this, as does mulching.

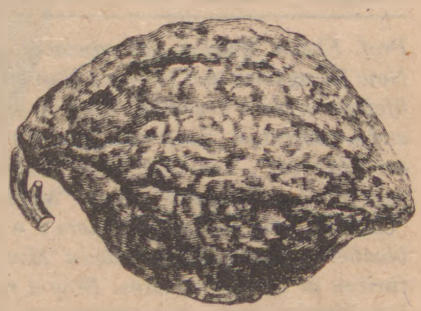
Diseases and Pests

The first rule in fighting disease and pests is to pick resistant varieties. All seed catalogues give an indication of how resistant each variety is and you should heed this advice.

Most members of this family will come down with powdery mildew at one time or another. Fortunately, this disease comes late in the season and is rarely too great a problem. Again, you can look for resistant varieties.

Cucumbers are attacked by the striped cucumber beetle and this can be controlled with applications of rotenone dust. It is best to dust your cucumbers about every 10 days. The squash bug and the vine borer may attack occasionally. The former can be controlled by picking off the adults and eggs, and the latter can be controlled by making sure that you burn all debris in the fall and leave no eggs to overwinter.

Essentially, the same pests attack the other members of the family and can be controlled in a like manner. Overall, it would have to be said that diseases are usually not a problem in the one garden, and rotenone will take care of the pest problems.



Hubbard Squash

The Reliance Peach

A Sure Bet for the Small Fruit Grower

By Elwyn Meader

Taken from the wild, and first cultivated in China during remote antiquity, the peach got its botanical name *prunus persica* Batsch from Persia from whence in turn it was carried to Europe and then brought to America by the early colonists. This plant immigrant is a rather tender tree, loath to endure the extremes of cold winters. So peaches are grown commercially in southern states. Fruits harvested firm-ripe are shipped to our northern markets. Those who love peaches know that nothing tastes fully equal to a freshly picked, soft, tree-ripe fruit. Peaches can be grown in almost every state, if the very hardiest kinds are planted.

Forty years ago, while I was a young pomologist working at the New Jersey Agricultural Experiment Station, there were some 275 varieties of peaches under test and observation. The popular Elberta proved to be one of the least winter-hardy cultivars. It often suffered some loss of tender flower or fruit buds (whichever you care to call them) before warm days of spring arrived. In the coldest winters, a complete winter-kill of Elberta flowerbuds resulted. Such a winter is called a "test winter" by horticulturists, for only then can the true relative hardiness of cultivars be learned and recorded. Flowerbuds are usually the most tender part of the peach tree, and it has been demonstrated all too often that sub-zero Fahrenheit temperatures during one cold night in winter can reduce or ruin a peach crop.

Prof. M. A. Blake, famous peach breeder in New Jersey, had selected from a cross of the two old-time varieties, Slappey and Dewey, a seedling he had labeled N.J. No. 41SD, that consistently had above-average winter hardiness. Years later, it was finally named Meredith, after having been found pleasingly winter-hardy in New Hampshire, though never a fully acceptable yellow-fleshed commercial cultivar for New Jersey.

In the early 1940's, Dr. A. F. Yeager, widely known plant breeder, had started a peach-breeding project in New Hampshire. After returning to this, my native state, I was able to exploit Meredith peach as one parent used in breeding work to develop dependably hardy peaches. Test winters happen frequently at the northern limits of peach culture. New Hampshire proved a good place to select hardy peaches. About the same time that peach breeding was initiated in New Hampshire, some peach germ plasm became available from Minnesota, of all places to find it.

An outstanding horticulturist, W.H. Alderman, as a young man, left West Virginia to spend the rest of his life in a colder, more northern state breeding hardy fruits. I remember someone asking him at one of the annual meetings of the American Society for Horticultural Science if it wasn't difficult to find any fruits hardy enough for Minnesota where winter lows of minus 40 degrees Fahrenheit are not unknown. His terse answer: "Not after the first winter!" He planted peach stones that had been collected in eastern states in that cold northern state. Only the very hardiest seedlings survived. Following an occasional mild winter, a few survivors fruited. He planted the seeds from these trees. After several generations had been fruited there in Minnesota, with the hardy trees having been selected by Nature's own ruthless elimination of all tender trees, Dr. Alderman sent peach stones to Durham, N.H. for planting. Several years later, seedlings from the Minnesota peach (Minn. No. PH-04559) proved most noteworthy. All had eglandular leaves with serrate leaf margines and bore medium-sized white freestone fruits that varied but little from tree to tree. These seedlings also ripened their fruits simultaneously. Best of all, they seemed fully hardy in both tree and flowerbuds at Durham, N.H.

A really hardy yellow-fleshed peach was wanted, as most people in the northern states, for some inexplicable reason, prefer yellow rather than white peaches. So I made a cross between the Minnesota peaches and Meredith. All of the first generation seedlings bore white peaches, as was anticipated. Stones from two or three of the hardier trees in the first generation were saved for planting; only in the second generation could there be segregation for white and yellow fruits in a three to one ratio. There was the exciting possibility, if a sufficient number of seedlings were grown, that at least one of them might have a combination of both extra-hardy flowerbuds and good quality yellow-colored fruits.

In August, 1959, one second-generation seedling that bore decidedly attractive, good-sized and good quality yellow peaches was tagged for further observation in subsequent seasons and assigned number NH 59E. At the time, there was no way of knowing what its relative flowerbud hardiness might be. However, it was not long before a test winter happened, as a somewhat lopsided

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Prof. Elwyn Meader was educated at the University of New Hampshire and Rutgers University, and has spent a lifetime in plant breeding research with fruits, vegetables and ornamentals. Some new fruit varieties credited to him are "Fall Red", "Fall Gold", and "August Red" everbearing raspberries; "Sunapee" peach, "Mericrest" nectarine, and "Cocheco" red-leaf plum. There's a cultivated highbush blueberry named Meader; also a "Meader" persimmon that thrives in northern states. Now a retired horticulturist, Dr. Meader lives on a small farm next to the Meader homestead place in Rochester, N.H. Block prints are by Siri Chandler.

five-year-old tree growing in a crowded row of seedlings, No. 59E experienced the following minimum temperatures during the winter of 1961: January 22: plus 21.50; January 23, minus 14, January 24, minus 25, and February 2, minus 15.

It was the coldest winter of the decade at the Horticultural Farm, Durham, N.H. Complete crop loss of all peaches was expected. From past experience, after having recorded a minimum of minus 15 degrees Fahrenheit in the orchard at any date during the winter, one just assumed that there would be very few, if any, peaches the following summer. Yet in late August, 1961, NH59E ripened a bushel of lovely red-cheeked, yellow peaches. All standard cultivars in the orchard were a complete failure. The old variety Marquette bore a peck on a large tree. Cumberland and Polly each had one or two peaches on large, 15-year-old trees. All three of these kinds are white peaches. Propagation of NH59E, by budding to peach seedling rootstocks to grow young trees of this promising new selection at other locations, was started without delay in September of that year. In 1964, I thought of the name "Reliance" and New Hampshire Agricultural Experiment Station released the new cultivar for trial in northern areas where peach culture is uncertain because of cold winters.

How well has the Reliance peach lived up to its name? Any recently introduced cultivar has to go through a period of testing in places other than where it originated. Time measured in years, sometimes in decades, is needed. Any new plant entity purporting to be an improvement over older popular and well-proven kinds is either accepted readily by growers and orchardists or soon lapses into the long list of lost endeavors, depending on its inherited genetic make-up and response to climate and culture where it is tested. Always an interaction of heredity and environment.

Reports from professional horticulturists who are studying peach cultivars for winter hardiness have been favorable to Reliance. At Urbana, Illinois, which lies 100 miles north of the limits for commercial peach production in that state, Daniel B. Meador reported in January 1977, Volume 31 of *Fruit Varieties Journal*, page 13, that of 21 popular present-day cultivars in his orchard trials, that Reliance topped them all by having the highest percentage of live fruitbuds for the three years of 1974, 1975, and 1976, following critical low winter temperatures. J. LaMar Anderson and S.D. Seeley at Logan, Utah, in a competent research study of "Bud Hardiness of Peach Cultivars in Utah" published in July 1977, Volume 31, of *Fruit Varieties Journal*, pages 50-53, in which they rated bud hardiness of 12 peaches and one nectarine variety by artificial freezing methods, also placed Reliance at the top of the list for its hardiness. I quote their conclusion: "Our results substantiate the recommendation that Reliance be planted in areas where the more tender varieties lack sufficient bud hardiness for consistent production."

Of even greater interest to me have been recent personal letters written to me by venturesome gardeners who have tried Reliance in places where one is not supposed to grow peaches. These are all fine men devoted to testing of new fruits, and I am sure that they will not object to my sharing with you some comments from their letters. I quote from John Bonn, Two Rivers, Wisconsin: "Reliance is the only partly dependable variety that I can grow." The following, dated September 24, 1977, from Harold Linder, Sperry, Iowa: "Our Reliance peach did have a few peaches this year; perhaps it will do better next year, as it is a young tree. I believe that under Midwest conditions, the Reliance will be about the only yellow freestone peach that will produce. We definitely are not peach country, but they do taste good when we have a crop." As everyone remembers, the winter of 1976-77 was as any old-timer might say——a real humdinger! In July, 1977, George A. Webster, Glens Falls, N.Y. wrote, "The winter ups and downs did a complete job on the six Reliance peach trees. All are dead. We had two years of good crops and now I am undecided about planting more. I have a notion that the weather will be on the colder side for some years ahead." Roland DeCoteau, South Paris, Maine sent me a color transparency picture of a basket of Reliance peaches held in his lap that he had recently picked from his tree. Needless to say, he seemed pleased to have grown them. And so it goes!

Even hardier peaches than Reliance are needed and it is encouraging to know that it is being used as a hardy yellow-fruited parent in breeding projects, both in the United States and in Canada. In all probability, even more dependable peach cultivars than Reliance can be expected in the years ahead.

The fact that so many nursery catalogs feature Reliance, both in colored pictures and printed words is a good indication that it has been accepted into the trade. If you wish to plant a tree or an orchard, you need not consider a companion for pollination, as Reliance is self-fruitful like most peaches. But don't expect the impossible! Select a good orchard site. A field having good air drainage on still, cold nights, and where low's seldom drop below minus 20 degrees Fahrenheit during the winter. I grow Reliance peach in my own small orchard here in Southern New Hampshire and I assure you that it has cropped in our coldest winters when standard kinds have failed. □

Sensible Pest Management In the Orchard

By Stephen Page

Integrated Pest Management is an idea that has found its time. This new approach to agriculture is spreading like a tidal wave in a sea that was barely stirred by a ripple a few years ago. Commercial orchardists once scoffed at the idea of discontinuing chemicals. Now many are eagerly awaiting the latest research, beginning at last to realize the dead-end road which was being pushed on them by chemical companies. Conversely, organic growers are realizing that there are some chemical controls that will supplement biological controls without harming the environment or the ecological balances in the orchard. As these two groups come together, the methods of integrated management will change and grow, but the groundwork has been laid and the basic principles set down.

In the Summer '76 issue of *Farmstead*, I set down the basics involved with planting an organic orchard. At that time I had 20 trees and plans for 120 more. I now have 200 trees in the ground and am leasing another 60 trees. I remain dedicated to the organic ideals I set down in that article, but economic pressures demand that my trees bear marketable fruit. Because of the size of my orchard, labor intensive methods are out, and the only reason I let the orchard get that size is because I am convinced that integrated pest management will give the quality and quantity I need without compromising my original organic ideals.

Steve Page lives in Washington, Maine, and writes an orchard column for the Maine Organic Farmers and Gardeners newspaper.

Basically, Integrated Pest Management (IPM) involves using biological controls—insect trapping, introduced predators, and naturally occurring predators and parasites of harmful species, together with limited chemical applications when necessary. Chemicals must be selective (easy on beneficial insects), relatively nontoxic to non-target organisms (fish, birds, people, wildlife), and short-lived in the environment. Monitoring pest populations is a key element of IPM so that chemical sprays can be timed to specific pest outbreaks, and reduced according to the seriousness and duration of the pest population. Since only one application of a broad-spectrum insecticide can seriously affect the dynamic relationships in the orchard, the goal becomes to use as few chemicals as possible.

The history of IPM begins 30 years ago in Nova Scotia. The Annapolis Valley was at one time the most concentrated fruit-growing area in Canada. Before 1900, very little spraying for pest control was done. Records show that serious damage to fruits and foliage often occurred. Pesticide use became intensive by the 1940's, at the same rate as the U.S., but a problem developed—the codling moth damage increased from insignificant proportions to one-third of the total crop in 1948. Pesticides (including DDT for codling moth) were killing the predators while the pests were getting more resistant.

The Research Station in Kentville began in 1943 to study the populations of 73 species of insects and mites which were the pests of apples in Nova Scotia. The weaknesses of chemical controls quickly became apparent. The researchers looked at the total orchard ecosystem, and found 98 different species of arthropods on a single unsprayed tree. This ecosystem was a balance of pests, parasites, and predators, and the balance was always changing. Broad spectrum chemicals left an imbalance—destroying the natural controls as well as the intended pest. When mild selective insecticides were used, natural controls remained, keeping pests to a reasonable economic level. If the level of damage surpassed what the grower considered an economic threshold, stronger chemicals were used to restore the balance.

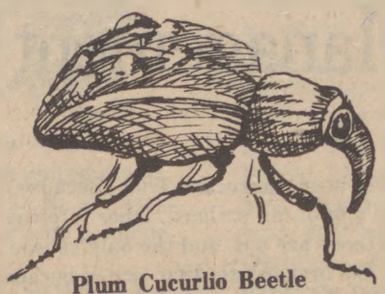
The concept of an economic threshold of pest damage is one that

intrigues Dr. H. Forsythe, Professor of Entomology at the University of Maine at Orono, who specializes in apples and blueberries. More research has to be done, he says, to determine how to measure the amount of pest damage that can be tolerated without causing economic hardships for growers. In Nova Scotia, this decision was left up to the orchardist.

Dr. A.W. McPhee, one of the leaders of the Nova Scotia project, recalls that "growers in the Annapolis Valley made a substantial switch to the integrated control program in 1954, the first year that ryania was used extensively for the control of codling moth. It appears more than coincidence that the number of bees visiting apple blossoms increased five-fold after the switch." In 1971, 90 percent of the growers in Nova Scotia had changed from complete reliance on insecticides to the integrated control program. Most averaged one or two insecticide treatments per year.

In recent years, certain universities in the U.S. have begun to study the integrated control methods—the predictable results being that different conditions in different states demand modifications in the IPM scheme. Ohio, Pennsylvania, and Michigan are all studying IPM in their orchards. In Michigan, a van equipped with a computer terminal visits individual orchards where pest and predator population data, weather conditions, and other data are fed into the computer. Within minutes the computer spews forth recommendations on when and how much to spray. As more information is gathered, the recommendations are more precise. One of the leading authorities on insect monitoring techniques is Dr. Ron Prokopy at the University of Massachusetts in Amherst. That state, too, is studying the feasibility of an IPM program.

Monitoring pest populations is the key to IPM and one almost has to be an amateur entomologist to keep up with the bugs. First, the orchardist should determine which insects are the problems in his orchard and concentrate on these. The Cooperative Extension Service offers a booklet: "Fruit Facts," which lists the various pests of apples, their life cycles, and identifying information. If there is any question as to what a certain insect is, a sample should be sent to Herb Wave, Extension Fruit Specialist, Highmoor Farm, Monmouth, Maine 04259. Here are the basic methods of monitoring:



Plum Curculio Beetle

1. **Direct observation.**

Mark several branches on different trees throughout the orchard. These will be the branches that you will observe at seven to 10 day intervals during the growing season. Look for mites, mite eggs, aphids, codling moth eggs in late June, apple brown bugs, and anything else that might be important. Record the information, and by seeing when the eggs hatch, or when the populations begin to increase, you will know if controls are needed. A magnifying glass is mandatory equipment.

2. **Pheromone Traps.**

In the past, molasses, vinegar, and cornmeal potions were used to trap codling moths and apple maggots. The modern equivalent is Sex Pheromone traps—insects are lured to a sticky trap by a chemical that duplicates the females' attractant scent. This is especially used for codling moth monitoring. In Nova Scotia, unsprayed orchards had substantially reduced damage when these traps were used at the rate of one trap per four to five acres, but although damage was suppressed in commercially sprayed orchards, it was still above economic

Codling Moth

levels. As a monitoring tool, however, the Pheromone traps are still very useful, but on a small scale they are expensive and hard to get.

3. **Visual Traps.**

Apple maggots are visually attracted to certain colors at certain stages of their development. After hatching, they are attracted to yellow—specifically Saturn Yellow ' , manufactured by Day-Glo Corp. This seems to be a feeding attractant, and if a board or piece of cardboard is painted this color, and then coated with a sticky substance, the moths will be trapped in great numbers. These are available from Zoecon Corp., c/o W.H. Palmer, 346 South Avenue, Williamson, N.Y. 14589. The Zoecon traps are 9"x12" yellow cardboard rectangles coated with Bird Tanglefoot ® (the stickum) and impregnated with protein hydrolysate and ammonium acetate, two scent attractants. At the rate of one to two traps per acre they will help monitor

Apple Maggot Fly

populations. At the rate of six traps per tree, the traps have eliminated the need to spray for maggots.

Apple maggots, in a later stage of development, are attracted to spheres, painted bright red, 3"-6" in diameter. While the yellow is a feeding color, the red is an oviposition, or egg-laying stimulant. Croquet balls are commonly used, painted red and covered with Tanglefoot ® . As with the Zoecon traps, it is important to keep all foliage at least 12 inches away from the trap in all directions so that insects have a clear shot at it. Foliage beyond that should be thick enough to draw maggot flies to the area.

Pheromone and visual traps tell two things: a) when hatching begins, and b) later activity peaks. The grower has to time spray applications according to when the traps begin to collect insects and how severe the problem seems—something that takes experience to judge.

4. **Jarring technique.**

Arthur Amidon, growing 80 acres of "alternative apples" in New Hampshire, describes this as simply taking an old sheet, spreading it under a tree, and "shaking the hell out of the tree." He finds it somewhat useful for finding plum curculio, which plays possum when disturbed. However, to actually monitor populations, this would have to be done every other day at least.

5. **Greenhouse hatching.**

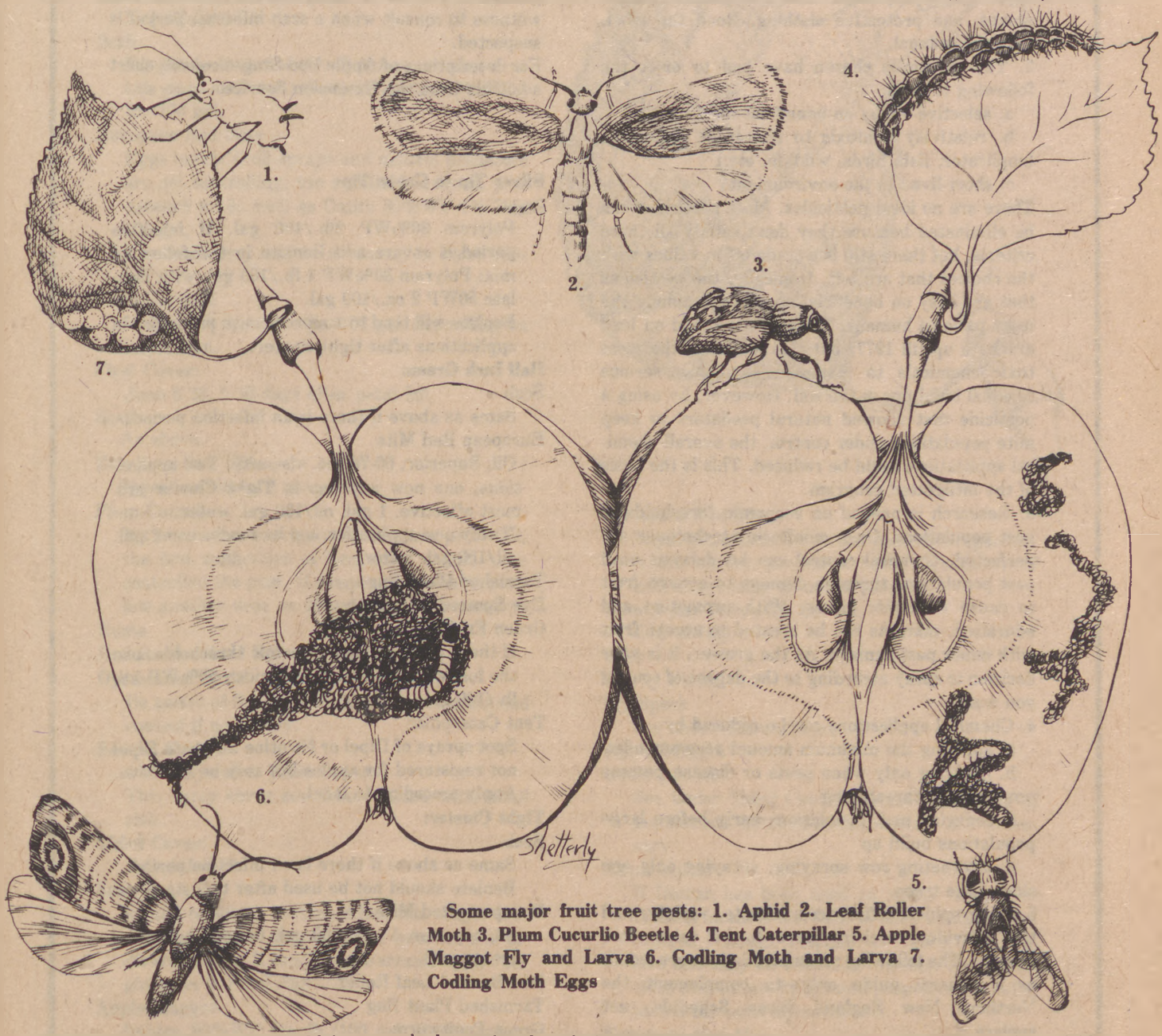
In Nova Scotia, the Extension Service will take sample limbs from trees during the dormant season, place them in a greenhouse to hatch the mite and insect eggs, and by the relative proportions of pests and predators, make recommendations to the grower as to what to expect in the coming season. Although expensive, this technique would certainly be helpful in planning.

6. **Other monitoring techniques**

They will undoubtedly be forthcoming. As the science of Pest Management progresses, the need to accurately determine the relative populations in the orchard will increase.

In the following Spray Schedule, I have attempted to share all the information I have collected in several months of studying IPM programs in several states and Canada. Coming from an organic farming background, I hesitate to recommend chemicals to anyone, and I hope that those who have never used chemicals before will enter into the program with the same caution I did.

The spray program that follows is directed toward commercial growers—those who expect an income from their trees. Those who grow for personal consumption should use insecticides only when the vitality of their trees is threatened, or when setting out young trees, which must be given every possible chance in the first, critical years. The noncommercial grower might more readily consider using fungicides, if his tree is susceptible and if weather conditions indicate.



Some major fruit tree pests: 1. Aphid 2. Leaf Roller Moth 3. Plum Curculio Beetle 4. Tent Caterpillar 5. Apple Maggot Fly and Larva 6. Codling Moth and Larva 7. Codling Moth Eggs

Recommended Spray Schedule

1. Apply all pesticides in strict accordance with principles presented in *Pesticide Applicator Training Manual.* Copies are available from Maine Pesticide Control Board, State House, Augusta, Maine 04431. Safety to yourself and the environment is most important. Use a respirator, rubber gloves, and protective clothing. Read the label, read the manual.

2. The chemicals chosen have had to meet the following criteria:

a. selective—easy on beneficial species

b. relatively nontoxic to nontarget organisms (applicator, fish, birds, wildlife, etc.)

c. short-lived in the environment

There are no ideal pesticides. Most pesticides can be eliminated because they don't satisfy all three criteria, but there still is a trade-off in values with the choices that are left. Ironically, the pesticides that are easy on beneficial species are among the most toxic to humans. Nova Scotia relied on lead arsenate up till 1977, but this is one of the most toxic chemicals to mammals, and has serious residual build-ups in the soil. However, by using a pesticide that allowed natural predators to keep mite populations under control, the overall chemical applications could be reduced. This is the basis of the integrated program.

3. Research is needed on economic thresholds of pest populations. Once monitoring techniques are perfected, chemical control can be delayed until pest populations threaten damage to enough fruit to cause economic losses. With promotion and education, markets can be created to accept fruit with minor pest damage. As the grower, it is your decision to spray according to the degree of control you want.

4. Chemical applications can be reduced by

a. applying the minimum amount recommended

b. applying only when pests or disease become economically threatening

c. reducing pest populations early before large populations build up

d. alternating row spraying; spraying only one side of the trees.

5. Geographical differences; climate, variety, and the individual orchard have to be taken into account. The following recommendations are meant as a general guide only—to complement the Northern New England Spray Schedule, not replace it.

6. The user of this information assumes all risks for personal injury or property damage.

7. The following schedule does not include information for foliar feeding of fertilizer or trace mineral sprays. These should be applied with the regular sprays whenever a deficiency is apparent or shows up in a leaf analysis. Liquid seaweed, fish emulsion, borate and other trace mineral sprays may be necessary.

8. Fungicides should be applied for scab *only* when an infection period occurs. Infection is a function of leaf wetness, temperature, and time. At lower temperatures, more time of leaf wetness is required for a scab infection. The Extension service publishes a table of temperature/hours of leaf wetness to consult when a scab infection period is suspected.

For descriptions of Apple Bud Stages consult chart available from the Extension Service.

Silver Tip to Green Tip:

Scab

Polyram 80%WP 2lb./100 gal. If infection period is severe add Benlate in the following mix: Polyram 80%WP 1 lb./100 gal. with Benlate 50WP 2 oz./100 gal.

Benlate will tend to suppress mite predators in applications after tight cluster.

Half Inch Green:

Scab

Same as above if there is an infection period.

European Red Mite

Oil, Superior, 60-70 sec. viscosity. Two applications, one now and one in **Tight Cluster** are most effective. 1 gal. oil/100 gal. water.

If only one application can be made, use 2 gal. oil/100 gal. water.

Tarnished Plant Bug

Eye Spotted Bud Moth

Green Fruitworms

If these pests exceed economic thresholds, use the following with caution: Imidan 50%WP 1¼ lb./100 gal.

Tent Caterpillar

Spot sprays of Dipel or Nicotine Sulphate Dipel not registered for apples but may be effective. Apply according to label.

Tight Cluster:

Scab

Same as above if there is an infection period. Benlate should not be used after this stage.

European Red Mite

oil, superior, 1 gal./100 gal. (second half of oil treatment)

Red Banded Leaf Roller

Tarnished Plant Bug

Green Fruitworm

Imidan 50%WP 1¼ lb./100 gal. if necessary

Pink:

Scab

Same as above if there is an infection period

Red Banded Leafroller

Tarnished Plant Bug

Green Fruitworms

European Apple Sawfly

same as above if necessary

Bloom:

May 24-June 5

Scab

Same as **Tight Cluster** if necessary.

No insecticides during **Bloom.**

Petal Fall:

May 29-June 10

Scab

Fungicide if necessary. Polyram as above or this stage and later substitute Captan 80%WP 1 lb./100 gal.

European Red Mite

Eggs hatch. If oil sprays and natural predators are not controlling, use a miticide easy on predaceous mites such as Omite 30%WP 1½ lb./100 gal.

A second spray may be necessary in **First Cover.**

Plum Curculio

Imidan 1¼ lb. or 1½ lb./100 gal. depending on infestation.

First Cover:

June 5-20, 7-10 days after petal fall.

Scab

As above.

European Red Mite

Repeat as above if necessary.

Plum Curculio

If the weather has been warm since petal fall, the first application of insecticide should have controlled the pest. If temperatures have been low another dose as above may be necessary.

Rusts

Red Banded Leaf Roller

Oystershell Scale

Be aware of flare-ups of minor insect pests and control if necessary.

Second Cover:

10-14 days after **First Cover.**

This spray cover could be omitted with small risk.

Third Cover:

July 1-July 7

Scab

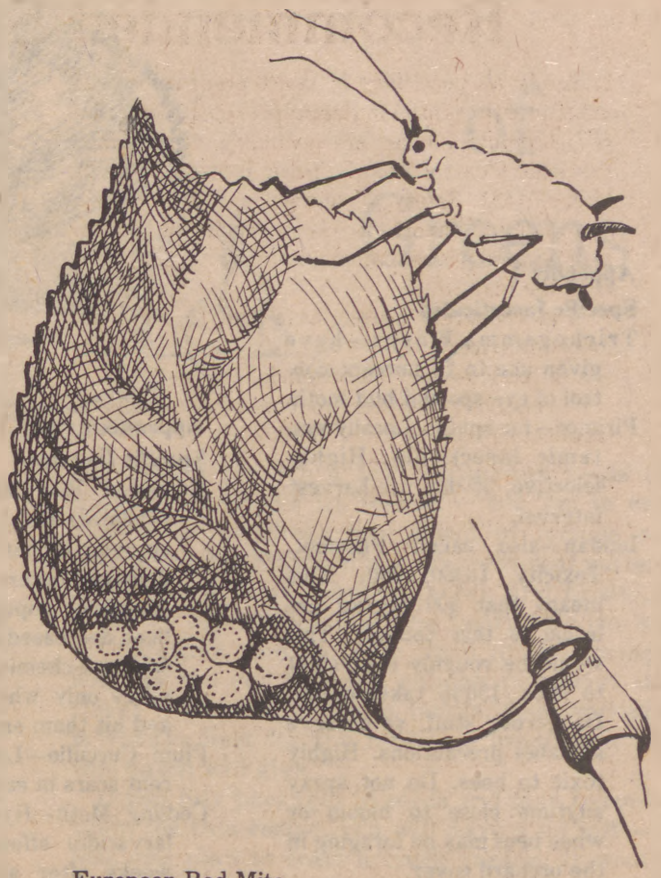
Should be under control. After this stage, fungus diseases are dependent on weather and individual cases. If conditions warrant, apply fungicide as in Petal Fall.

Apple Maggot

Imidan 50%WP 1¼ lb./100 gal. if necessary. Determine time and severity of activity with sticky traps. Lower dosages or no insecticide may be sufficient.

Codling Moth

If insecticide has been for apple maggot, codling moth also should be controlled. If no insecticide has been used for maggot, use Ryania according to the label. Severe infestations may require a stronger insecticide.



European Red Mite

Rapid population increases possible, especially where natural predators have been killed. If necessary, treat as under petal fall.

Fourth and Following Covers:

End of July

Scab

Soothy Blotch

Fly Speck

See under **Third Cover.**

Apple Maggot

Codling Moth

See under **Third Cover**. Careful monitoring of populations determines if controls are necessary.

Apple Aphid

If Imidan has been used on Apple Maggot or Codling moth, it will help to keep aphids under control. Nicotine Sulphate is somewhat effective and easy on beneficial insects. New aphicides that fit into integrated programs are being tested for severe problems.

European Red Mite

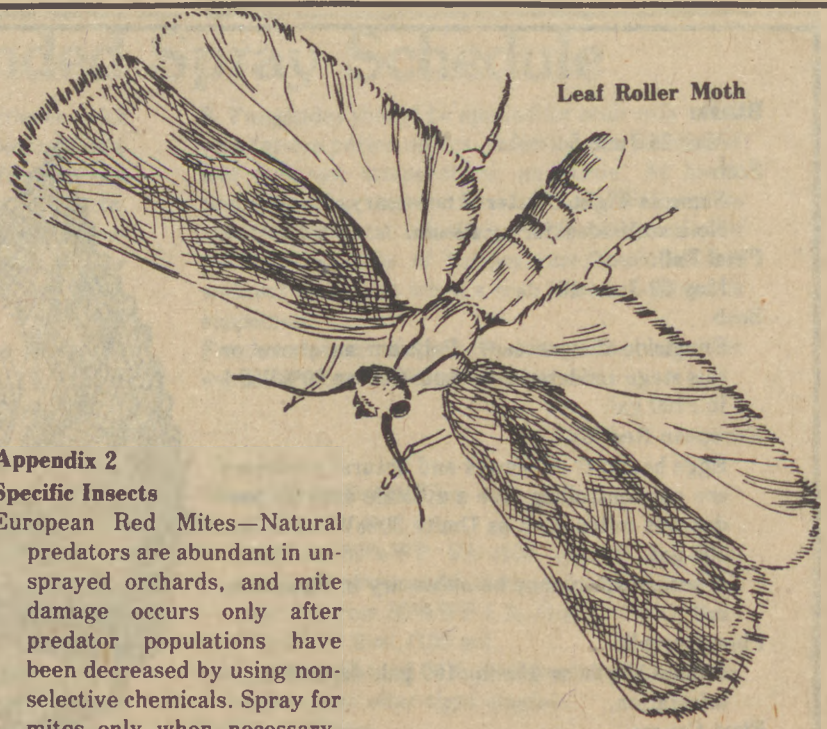
Two Spot Mite

If natural predators aren't around, populations usually build quickly in late summer. Two applications, seven to 10 days apart, are necessary. See petal fall.

Red Banded Leaf Roller

Eye Spotted Bud Moth

Rarely a problem but be aware of sudden flare-ups.



Leaf Roller Moth

Appendix 1

Specific Insecticides

Trichogamma Wasps—have given one to 25 percent control of eye-spotted bud moth.

Pirimor—for aphids. Locally systemic insecticide. Highly selective, 35-day pre-harvest interval.

Imidan—also called Phosmet. Toxicity LD50 300. This means that 300 mg/kg are lethal to test animals. This would be roughly equivalent to ½ oz./150 lb. taken orally. Dangerous stuff, so observe all label precautions. Highly toxic to bees. Do not spray anytime close to bloom or when bees may be foraging in the orchard cover.

Nicotine Sulphate—Nontoxic to beneficial species. Effective against aphids, apple sucker, pear psylla, leaf-hoppers, mealybug, young tent caterpillar, eye-spotted bud moth. Toxic to bees.

Ryania—For codling moth, spray at 10-day intervals when stings first appear on fruit. Slow acting. Second and third sprays will control eye-spotted bud moth.

Bacillus Thuringiensis—Dipel and other trade names. Not registered with EPA for apples, so its use is theoretically illegal. Nontoxic to humans or beneficial insects. Personal observation shows effectiveness against tent caterpillar, fall webworm, fruitworm, and other caterpillars on apples.

Fungicides — "Fungicides have a decided effect on the number of viable species of soil fungi." Nyle Brady, **Nature and Properties of Soil**. Use sparingly.

Appendix 2

Specific Insects

European Red Mites—Natural predators are abundant in unsprayed orchards, and mite damage occurs only after predator populations have been decreased by using non-selective chemicals. Spray for mites only when necessary, and hit them early.

Plum Curculio—Look for crescent scars in early drops.

Codling Moth—Ryania (organic larvacide) effective for two weeks after application. In heavy infestations, Imidan may be necessary.

Apple Maggot—Sanitation (picking up *all* drops and rotten fruit) can greatly reduce damage, but infestation can still occur from outside sources. There are no known predators.

Aphid Predators—Abundant in unsprayed orchards. Include serphid fly larvae, midges, and ladybeetles. Introducing ladybeetles has questionable value, especially in northern climates.

Mite Predators—Overwinter in soil cover and orchard litter so try not to overspray with oil, and aim for the tree. Early sprays of oil are less harmful to these predatory mites, which hatch later than harmful mites, then follow them up the tree.

Tent Caterpillars—These don't migrate until June, so spot sprays will control them until then. Don't spray the whole orchard.

Appendix 3

Variety Sensitivity

Several apple varieties show differing degrees of sensitivity to chemicals. The damage can range from defoliation to leaf burn to fruit russeting. The following varieties are incompatible with the listed chemicals. None of the other chemicals in the spray schedule are incompatible with any variety.

Cortland—powdery mildew can be a problem. Benlate mixed with Polyram fungicide should help if a problem exists.

Golden Delicious—no Benlate, Sulphur, or Cyprex. Don't spray G.D. unless there are good drying conditions. Otherwise, russeting will occur.

Red Delicious—oil will damage after green tip. No sulphur.

Other varieties—check with extension service before using any different chemical to check compatibility with your varieties.

A Patch of Greens

By Darrell Rolerson

Unfortunately I can't promise you, as Thomas Hyll did in his old English herbal, "that many savours may be felt in one herb; take first of the lettuce two or three seeds, or the endive so many, of the smallage the lyke, of the Basil, the Leek and the Parsley. Put together into a hole and there will spring up a plant having so many savours or tastes." But I can pass on to you this wonderful recipe for a patch of greens. The space required in the garden is one short single row. It will produce all the greens, for salads and for "the pot," that a family can normally consume from spring until way past the time the snow flies.

In a cup or a saucer combine: one pinch of kale seeds (Dwarf Scotch or Marrow Stem); one pinch of Swiss chard seeds (Silver Sea or Spanish Green); one pinch of endive seeds (Full Heart); one pinch of mustard seeds (Southern Giant Curled); one pinch of chicory seeds (Witloof chicory is a special vegetable, taken up for its roots to "force" them during winter); one pinch of parsley seeds — or *two* pinches, depending on the prerogative of the "cook" (for parsley *root* try Hamburg, and for beautiful crimped leaves try Champion Moss Curled); one pinch of Calendula seeds (Orange King for best garnishing petals); a few nasturtium seeds (Empress of India for its leaves — try 'em in cream cheese sandwiches); one pinch of lettuce seeds (Black Seeded Simpson is a nice looseleaf variety in keeping with our purposes here); and finally, one pinch of basil seeds (Lettuce Leaf). Stir the seeds all together, and sprinkle them in the spring, as soon as the soil is warm enough to receive them. Cover the seeds lightly. A fertile, deep-worked soil is always best for the intensive production which this patch will give.

If you buy packages of seeds and plan to combine them for this recipe, you will have a lot left — unless you plan to start a truck garden. It would be neighborly to spread the mixture among friends. Even people who don't normally participate in gardening will at least sow a patch of greens, given a slight impetus. A teaspoonful of this mix will do it for them. Mail a patch to city-folk. These hardy greens will grow easily in any backyard, or any place where a square of concrete can be liberated from the sidewalk.

All 11 packages of the seed varieties recommended here can be purchased in a single swipe, by mail, from *A World Seed Service*, (P.O. Box 1058, Redwood City, California 94064), at a phenomenally low price: $2.85 includes postage. The recipe is ample to plant ten patches, which figures out to exactly twenty-eight-and-a-half cents each. Tell them Helloise sent you!

Darrell Rolerson lives in Islesboro, Maine. Drawing by Faith Rainbolt.

Plowing with a Draft Horse, Part II

Harrowing and Seeding

By Paul Birdsall

Success in getting a satisfactory planting of a field crop will depend on two factors: achievement of a loose, smooth seedbed, and the care with which you set up and gauge the planting machinery. I will discuss both of these factors in this article. The only exception to this rule is if you are a "no till" farmer and control weeds completely with herbicides. This point may be academic however, because I don't know of any horse farmers who are "no till" farmers!

In approaching this subject, I am fortunate to be able to ask the advice of Albert Cutting, lifelong teamster and subject of an interview in *Farmstead Magazine* (Summer, 1977), for he has come to us for another visit. It was on an earlier visit three years ago that Albert said to me one day, after looking at a newly harrowed field in which I planned to plant oats, "You don't mind my telling you your business, do you?" I didn't dare say no, so Albert went on to say, "You have to have *dirt*, and you won't get it harrowing that way." He explained that in addition to running up and down the field, you had to cross harrow, and then harrow 45° in order to cut up all sods and reduce the field to the desired, even, fine dirt necessary for good planting. After following Albert's tillage instructions, the grain drill set the seed at a consistent depth, and the covering board behind the drill smoothed the dirt firmly over the seed. An excellent set of oats and a good harvest followed.

Yes, horses (or mules or oxen) can till the ground for you, and haul the planting equipment, too. In harrowing with disc or springtooth, they will not break any records, for this is the hardest work they do because of the constant load and soft footing. There are, however, positive advantages to tilling and planting in this way, as there is less compaction of the soil than occurs with tractor use, and field work may be done when the soil is too wet for a tractor. (I am reminded of a news photograph of a corn picker being pulled through a wet corn field last fall by a tractor. Ahead of the tractor is a team of horses). In addition to being able to get on wet land before a tractor, horses can work land that is too steep for tractor cultivation.

Sometimes compaction may make the difference between being able to grow a particular crop and in not being able to. An example of this has been related by Wendell Berry in "The Unsettling of America" (Sierra Club Books, 1977), a tractor farmer who sold a farm to an Amish man who, of course, worked with horses. The former owner had not been able to grow alfalfa on the heavy land, and had intended to warn the new owner of this, but forgot. When, in the course of his rotation, the Amish farmer planted alfalfa and got a good crop, the former owner decided that compaction of the ground by tractor use was responsible for his own difficulties in establishing a crop. He could only conclude that frost during the winters had loosened the soil, and that new compaction had been largely prevented by the use of horses in tilling and planting.

Paul Birdsall farms in Penobscot, Maine.

The disc harrow is the first implement we will consider, as its use follows plowing. (It should be noted here that the better the plowing job, especially on new sod ground, the better the results you may get from harrowing. On occasion I have had to hire a tractor with rototiller to break down a piece that was not or could not be plowed properly.) Normally a team will draw a "single" disc which consists of a row of discs (usually 12) set in two separate frames or banks, each of which may be adjusted with a hand lever. The first passes over plowed ground will be made with the discs in the two banks running nearly parallel to each other. Later, to get deeper penetration, the levers are moved forward, serving to make the two banks work at an angle to each other. This disc covers six feet at a pass, and the effect of double discing (that is to say of having two rows of discs, one behind the other) may be achieved by overlapping the passes half the width of the harrow. The double disc, also known as a tandem disc, could be used with a team only if cut down so that its draft is equivalent to the single disc. Single discs for single horse work exist, but involve correspondingly fewer discs and are narrower. Larger single and double discs may be used with multiple hitches of three or more horses.

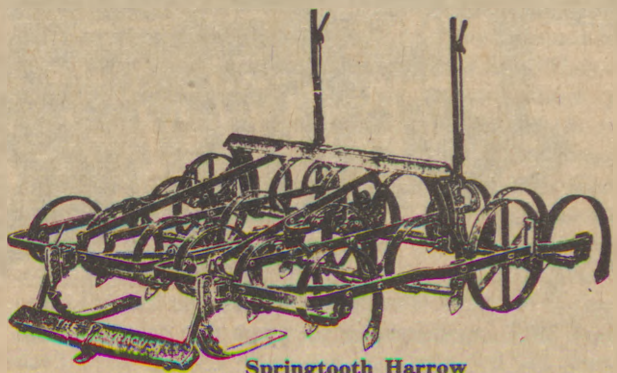
Single discs for horse-use come with a pole, if for a team (or with a set of shafts if for single horse, or they may be equipped with a set of swivelling dolly wheels mounted in the frame ahead of the discs). The team evener is hitched directly to the dolly wheel assembly with a clevis, and thus the team, when reined, can steer the disc by turning the dolly wheels to one side or the other. Albert

Horses pull a disc harrow

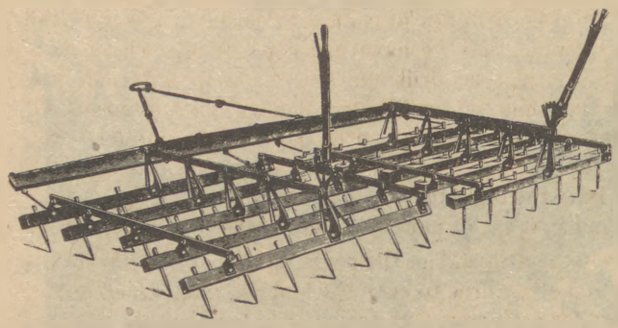
thinks, and I agree, that this arrangement is far preferable to the rigid pole or set of shafts, because the action of the harrow on uneven ground will tend to make the pole slap the horses on the side, and because the disc is much harder for the horse to turn with the pole than with dolly wheels. The single disc with wheels instead of pole is called a wheel harrow, and I am still looking for a good one, as they are hard to find. In the meantime, I have achieved almost the same result by cutting off the pole of the single harrow and hitching the stub directly to a pole cart or hitch cart with its own set of wheels and pole. Another advantage to the wheel harrow is that a three horse evener may be substituted easily for the double tree or team evener, and an extra horse employed. Because we have a spare horse, partly for breeding purposes, we often do this as it makes the work faster and easier. Each bank or frame of discs has a section for carrying weights, and the more weight carried, the deeper the penetration, and the better the result, but also the greater the draft on the horses.

Horse discs in good condition are difficult to find. The discs should not be worn out, the frame should be intact, and the bolts tight. Also important, the spring steel disc scrapers should be intact and in good condition, or the spaces between the discs will clog up with damp earth, and there is nothing more frustrating than having to stop on every pass and unclog the discs. To get a useable disc, you may have to improvise repairing, cutting up or otherwise adapting a set of tractor discs, but there is no reason why someone who is reasonably handy cannot come up with a serviceable implement in this way.

The next tillage implement that we use after the disc is the springtooth harrow. This consists of a frame about two-and-a-half feet wide into which are set eight or nine spring steel arms which pick and grab at the dirt instead of cutting it as does the disc. (Since our springtooths are buried under three feet of snow, the figures given are only approximate.) It serves to drag witch grass and weeds to the surface where the sun can dry them out, as well as to pick apart any fragments of sod left over from discing. These harrows may be combined for a wider pass, if more power is available, and for this purpose they are shaped so that they nest and bolt together side by side. We have been using two springtooths of different makes (found abandoned in the alders) chained loosely together behind a team or three horse hitch. This is acceptable, but it does not do as good a levelling job as a springtooth whose frames are bolted. I have heard of a team pulling four of



Springtooth Harrow



Spike-toothed Harrow

these units but in general, the best ration is one springtooth per horse. Three horses on two springtooth sections will speed things up. Finding springtooths should not be too much of a problem, as they still seem to be in general use. They require little care and maintenance except you must make certain that the springteeth are bolted firmly in place. One other note, there is no seat provided on a springtooth, as there usually is on a disc. You will walk behind with the lines unless you feel like rigging up a hitch cart with a seat on which to ride.

The next tillage item is one that I was scarcely aware of until a year ago. For several years, I had noticed some peculiar looking 4" x 4" pieces studded with spikes sitting up on a beam in the sheep barn. Since no one came along to tell me what the mysterious objects were, curiosity finally got the better of me and I laid out what proved to be three pieces on the barn floor. The two pieces with the spikes proved to be bevelled so as to fit and bolt together at one end to form a 45° angle. Then there was a spacer piece to hold the two main members apart in the rear. I put together the form, and an A-shaped object which proved to be a spike-toothed harrow, probably homemade on the farm years ago. Use of this implement became the third and last step in readying a seedbed for planting, for with a chain trailing between the rear portions of the harrow, and pulled by a team or single horse from the front or pointed end, we could smooth out the slight furrows left by the springtooth and at the same time continue to loosen the dirt and drag weeds to the surface. Spike-tooth harrows are to be found in old barns occasionally and were factory as well as homemade, usually with a rectangular frame. It should be fairly simple to design and make one for your own use.

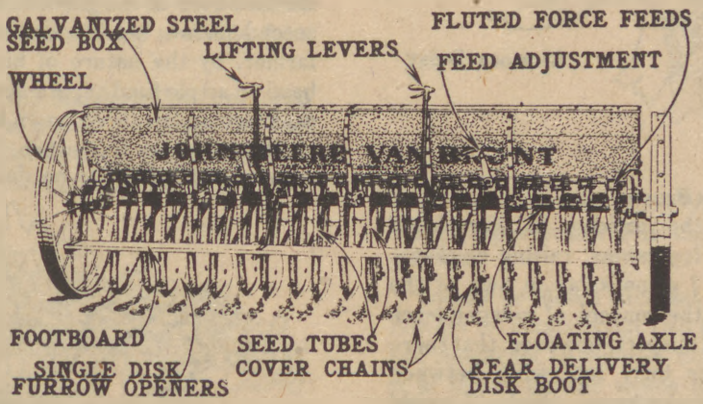
An important consideration relating to both the springtooth and spike-tooth harrow is that their use may involve not only preparing the seedbed, but also maintaining the seedbed in condition to plant for some time. In biological agriculture, where no herbicide sprays are used, a means of ensuring minimum weed competition and subsequent need for cultivation is to delay planting somewhat in order to fallow the ground. Successive crops of weeds are destroyed by periodic tillage. This process has implications for fall tillage and later planting as well. The cleaner the ground at planting, and the cleaner it can be kept through the growing period, the easier it will be to

The Birdsall horse pulls a grain drill

harvest, and to establish a second crop, like winter rye for green manure, with minimum of extra tillage.

Last fall my oats ground was clean enough after harvest that I was able to simply cross disc and plant winter rye rather than go through the time-consuming process of plowing the whole field first. This got the green manure in sooner and enhanced its chances for a good start before cold weather. Finally, you have the field ready to plant, and if you have followed Albert's tillage advice, you should have a good seedbed. We now need to consider what kinds of planting machinery are available and how to set them up and use them.

Broadly speaking, a row planter will be used for crops planted in rows, and a drill will be used for crops, such as small grains, which are to be planted field-wide. Successful planting will depend on the care with which you set up the machine and the accuracy with which you operate it in the field. Planting machinery should always be thoroughly cleaned out and lubricated after use, especially if an auxiliary fertilizer feed has been used. These machines should always be kept under cover, even if only a tarpaulin.



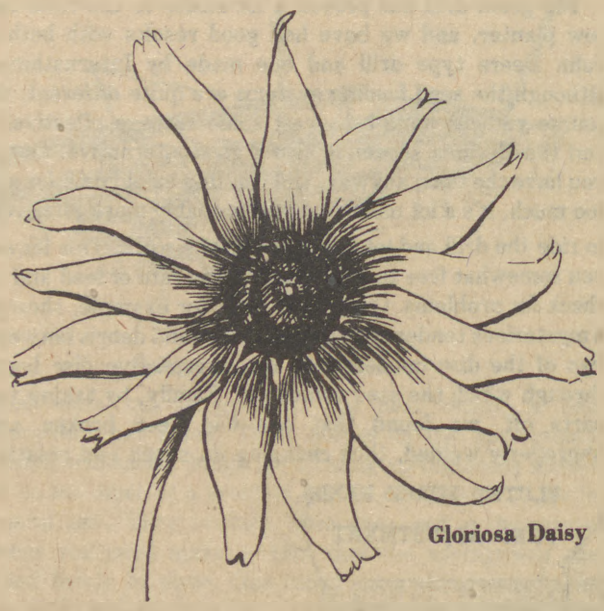
Rear view of grain drill, equipped with single disk openers.

We have found the row planter to be about the most difficult machine we have to set up and use. The proper gauge should be selected for the seed size, and the machine should be tested to make certain the right amount of seed is being planted per foot of row. This may be accomplished by jacking up the machine (same applies to the grain drill) engaging the drive, and rotating the drive wheels a measured distance. By collecting and measuring the amount of seed put down, it is possible to calculate the amount of seed sowed per foot of row and per acre. (Grain drills generally have instructions governing feed, so that it is not as necessary to check them, unless results seem to require it.)

It has taken a couple of years to get our row planter to put down dry beans properly. To begin with, we often had to recover a planting of beans after rain by hand. Finally I learned that the trailing covering plates were worn out and had to be replaced. Last spring, after planting a few rows of dry beans, I suspected trouble and suspended operations until a worn part could be replaced which was causing misalignment of the feed components and, thus inadequate feeding of the seed. I would have saved a lot of time and prevented some crop failure if I had gotten someone experienced to help me rebuild and set up the machine properly to begin with. As to speed of planting, two acres of beans will take between two and three hours to plant. We generally plant four acres a year.

The grain drill has proven a lot easier to use than the row planter, and we have had good results with both a John Deere type drill and one made by International, although the seed feeding systems are quite different. Of course you can hand-broadcast some acreage effectively, and the Cyclone seeder is also a good alternative. But if you have the team anyway, and can find an old drill for not too much, it's a lot more fun (and probably more effective) to ride the drill and let the horse do the work. This leaves you somewhat free to keep track of the rate of feed and to check for problems. Our newer drill, for example, showed a mysterious tendency to clog with dirt and debris between two of the disc openers and their respective disc boots through which the seed comes out. Finally, by taking the parts off, we found that one had been broken and improperly welded, thus changing its shape and creating the problem. Fortunately a new part was available from the manufacturer and the problem was solved. Sometimes, when the drill is set too deep, or the field is not smooth enough, dirt will clog the opening in the disc foot through which the seed comes out. Then you have to loosen and dislodge the dirt with a small pointed object. Riding a grain drill is really very pleasant on a nice day, and the problems are not usually very great as long as you can keep the horses going fairly straight. We can plant an acre in about 45 minutes, we generally plant about six to eight acres a year and with our equipment, we could easily do more. One other suggestion; it pays to run a roller or cultipacker over the newly planted grain, as this serves to firm the dirt around the seed and help germination. This operation may also be horse-powered.

As with any technology for working the land, there are advantages and disadvantages to working with horses. Good equipment is hard to find, but by imitating the Amish people, you can adapt smaller tractor equipment for use behind a pole or hitch cart. You must not overestimate how much heavy tillage your horses can tow in a day. (They can certainly harrow several acres.) On the other hand, you can grow all your own feed, avoid compaction of the soil, and farm land too wet or steep for a tractor. The less the compaction of the soil, the less the draft or power needed to pull tillage implements through it. And lastly, there is nothing pleasanter on a spring day than to drive a team over the land, with all the prospects of a good growing season ahead, and without the snarl of a tractor engine to come between you and your surroundings. Also, horses don't come up with blown head gaskets and flat tires at inconvenient times! □



Gloriosa Daisy

Easy-to-Grow

By Edie Brown

I read with interest the articles in *Farmstead Magazine* on building log cabins, raising chickens, pigs, and lambs, and I come away in awe of the homesteader's dedication to the concept of independence and living close to the earth. I suspect, however, that there are homesteaders and other busy folk who, between milking the cow and canning the beans, think, "I would love to grow some flowers." The dream is probably then discarded because there simply is no time. This article is for the person without hours to spare who wants to grow a few flowers, not for their functional uses of making an aromatic tea or mellowing arthritis, but because they are beautiful.

I won't begin by announcing in one breath that "This is all very easy," and in the next, "I've had 20 years of experience." Before 1974 I had never put a seed, vegetable or flower into the ground, nor cared for a houseplant. Since 1975 I've kept a chart of what perennial flower seeds I've attempted to grow and which ones succeeded and failed. Only about 50 percent have germinated and survived. Most failed, not because they were difficult to grow, but because I had no experience. The flower types discussed below are those that succeeded under an unpracticed hand, and without a greenhouse or windowsill (sills should be reserved for tomatoes!)

Although annual flowers are easy to grow and bloom in one season, I recommend perennial or biennial plants as the backbone of the garden. Most will not bloom until the second season, but it seems to me that a homesteader or farmer, by the nature of his/her chosen lifestyle, must have an ample fund of patience. A barn is not built in a day, asparagus takes three years before it can be eaten, a cow needs two years to freshen. Most annuals should not be planted until there is no danger of frost and the soil is sufficiently warmed. In the colder regions (in my area -20°F is not uncommon) the soil is not warm enough for planting many annuals until the end of May. Thus, a marigold seed planted in late May will bloom probably in late July-early August. A killing frost may arrive in late August-early September, and your marigold is finished. You've only been able to enjoy its flowers for a month. I do recommend using annual plants, particularly if you are the type of person (as I am) who cannot pass the brightly-colored packets of zinnias and petunias in the supermarket without picking out a few. When many perennials and biennials are finished blooming in late summer, the annuals can take over.

Coreopsis

Shasta Daisy

The flowers described below were chosen because they are easy to grow, are not plagued by insects or disease, and are essentially maintenance-free. The name listed first is the one by which they are most commonly known.

Malva-mallow [*Alcea fastigata*]. This is a tall (3-4') bushy plant that belongs in the back of the bed or border.

Flowers

From early July to frost it is covered with two inch rose-lilac, colored single flowers. The seeds are large, which makes the planting easy, and germination is rapid (about five days). As these plants are large, seedlings should be thinned to 1-1½' apart. I have heard complaints that the Malva-mallow spreads too easily and becomes a nuisance. I have always been pleased with a plant that spreads; my garden is never that organized that there isn't room for spreading flowers. If it begins to crowd other plants, dig it up. Malva-mallow seeds are available from Park Seed Co.

Coreopsis [**Tickseed**]. Like the Malva-mallow, *coreopsis* germinate very quickly. These plants are about 2½ feet high and bear yellow daisy-like flowers. They enjoy sun and do not require good soil. *Coreopsis* will bloom from late June to frost.

Yarrow

Foxglove [*Digitalis*]. I have never tried to systematically plant this biennial plant in orderly rows, although I'm sure it can be done. The seeds are so fine, I'm sure I'd have half the packet emptied in one spot. When the soil is moist, I scatter them thinly over an area and if time allows, lightly pat the soil where I suspect they might be. They should not be covered. If this method sounds haphazard, it has resulted in foxglove in odd but pleasing places, because the wind has caught and carried the seeds. If little rain has fallen, you might lightly sprinkle the general area of the seeds. Foxglove is an exquisite plant, bearing many bell-shaped flowers on long stems. It is difficult for me to tell you how tall the plants will grow. On the average I would say three feet, although I have grown a few that were six. One more word about foxglove: they like moist soil and light shade in the heat of the day.

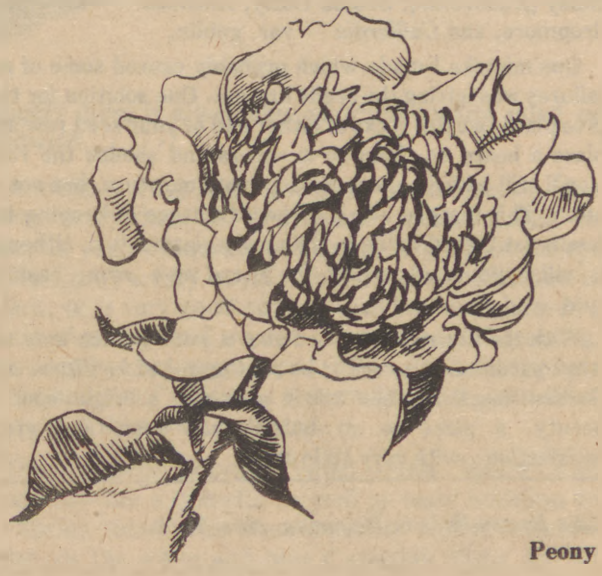
Sweet William [*Dianthus*]. This was one of the first perennial flowers I attempted which gave me a sweet taste

Sweet William

of success. There are many types of perennial, biennial and annual types available in the seed catalogs. They prefer full sun.

Yarrow or Milfoil [*Achillea*]. The *Achillea* forms mats of flowers on plants about two feet high. The seeds are fine and should not be covered, but are easily grown. The plant is in bloom for the whole summer and the flowers dry nicely for winter arrangements.

Peony. I have not grown these lovely plants from seed and one source book recommends that the amateur doesn't try. However, the plants are well worth purchasing and in fact, will probably still be faithfully blooming when your grandchildren take over the farm. When we bought our home, it had been abandoned for seven years and the yard was a jungle of waist-high goldenrod and weeds. While clearing the yard with a scythe, my husband discovered a bed of peonies which we had not been able to see even though they stood close to the entrance. My purpose in relating this story is to point out that these plants seem indestructable. The only insect that I have seen on them



Peony

Foxglove

are ants crawling on the unopened buds. They do not harm the flower. One warning about peonies: once they are established, don't transplant them. They may survive, but they'll punish you by not blooming for a few years.

Other perennials that this amateur has grown easily from seed sown directly in the garden include Gloriosa Daisy [*Rudbeckia*], Shasta Daisy, *Anchusa* — var. Italica dropmore, and *Gaillardia* — var. goblin.

One mistake I made which probably caused some of my failures was letting the seeds dry out. One solution for this is to place two flat rocks at either end of your seed row and place a board on them so it covers and shades the row. You'll still have to check for adequate moisture, but not as often. This method also has the advantage of keeping the family cat from digging in the newly-planted bed, although it will undoubtedly select the board as a prime basking spot.

With the flowers discussed above, your garden may not win a garden club award or be photographed for *House and Garden* magazine, but it will give you a bright spot of beauty, a place to sit quietly and rest, and great satisfaction—with very little effort. □

Edie Brown lives in Hagaman, New York.

Perky Salads

By Clarice Moon

Nothing tastes as delightful as the first pale green leaves of tender lettuce that is gathered dew-sprinkled in the early dawn. Lettuce is unbeatable in flavor. And it is easy to gather from your own small garden plot, by pinching off each delicate leaf; so as not to disturb the plant and to encourage it to produce more leaves for another harvest.

Possibly the first of spring salad greens is watercress plucked from cold running spring water. Care must be taken to separate the cress from the multitude of insects that lives among it. Once washed and clean, peppery cress is a welcome addition to any salad or sandwich.

Another spring salad green is the dandelion that grows everywhere on lawns and vacant fields. Its cheerful yellow blossom is the first to gladden the eye of the winter-weary world. It makes a tasty addition to salads, or is very good cooked with bacon or ham in a kettle of greens, and is good for canning and freezing. It is very heartening to serve frozen dandelion greens in the middle of winter as a reminder of the sun-filled day when they were gathered.

The common purple violet—both leaves and blossoms—are a colorful as well as tasty addition to the spring salad. The common blue violet, meadow violet, or the white and blue Canadian violet are all

Clarice Moon lives in Delavan, Wisconsin. Siri Chandler did the illustrations.

edible. The leaves are delicious in a mixed salad or in a greens pot. The flowers are bright additions to a salad.

Plantain is a mild-tasting pot green with heavily veined ribs which must be removed before adding it to the greens pot. The broad leaf plantain has ovate leaves up to six to eight inches long and half that wide. The stem has ribs in it and when a leaf is plucked a number of strings of various lengths are left dangling. As children, we picked plantain leaves and the number of strings hanging out was the number of lies we had told. It was just a game that we played like blowing the fluffy dandelion heads and making a necklace of dandelion stems looped together.

Wild mustard greens found along road margins and as golden patches of flowers in grain fields, make good pot herbs when young; so do wild horseradish leaves that are stripped from the main rib of the long leaves. The leaves of the sour dock can also be used for greens in early spring.

Asparagus is one of spring's early treasures. If you do not have a bed in your garden, it can be found growing wild along roads, railroads and fence rows; in fields and meadows across the country. The white-green sprouts are best when about four to six inches long. They can be used cooked in salads, as a vegetable, or in soups. It can be used fresh, can be frozen, or canned for future use.

Peas, both regular and snow peas, are early treats from the garden. Snow peas can be frozen successfully and work well in stir-fried Chinese cooking. They are gourmet food, fresh from the garden patch, and no harder to grow than regular peas. The only thing they ask is to get into the ground early.

Beets are another early planted vegetable in your garden. Thin out the largest beets when they reach the size of a quarter. Cook tops as well as the bottoms. Remove skins from the beets after they are cooked and enjoy the dish of beets and beet greens flavored with butter and vinegar, if you so desire.

Radishes, both red and white, are another early grower that can be planted as soon as the ground is workable. Snow doesn't hurt them. They can be grown in cool weather and served crisp and mild for salads, or as just plain eating, they are delicious.

Another cool weather crop, is spinach. It bolts to seed when the weather turns hot. Moist, cool soil will grow green leaves that are tender, eaten raw in salads or as steamed greens.

A most important vegetable of the early garden is the green onion or scallion grown from onion sets. These can be set out as soon as the soil is workable. They grow the whole season; they can be used all summer as green onions, and what is left will mature into large onions to be dried and stored for winter use. So plant lots of them.

WILTED DANDELION SALAD

4 cups well-packed young dandelion leaves, rinsed and drained
Dressing
½ lb. diced bacon
½ cup vinegar, cider
½ cup onions, chopped
¼ cup sugar

Brown diced bacon in skillet. Place in small bowl. Cook onions in fat in skillet, over low heat, until they're a light golden color and tender. Return bacon to pan. Pour vinegar into skillet. Mix in sugar. Stir until mixed. Pour hot mixture over dandelions. Toss to coat with dressing. Serve at once. Serves 6.

Note: May be used with lettuce and other wild greens.

CREAMED RADISHES AND ONIONS

2 cups red radishes
1 cup small onions
1 tablespoon butter or margarine
1 tablespoon flour
1 teaspoon curry powder
¾ cup milk
¼ teaspoon salt

Wash radishes and cut off ends. Halve. Place in saucepan. Prepare onions and place in saucepan with radishes. Cover with water and cook, covered, for 10 minutes. Drain. Melt butter in small skillet and stir in flour and curry powder. Add milk and cook, stirring, until thickened. Add radishes and onions. Season to taste with salt. Makes 4 to 6 servings. Can be served on toast.

FRESH SPINACH SALAD

1 pkg. fresh spinach, with stems removed, washed and chopped
½ head romaine, chopped
1 med. onion, cut in rings
4 slices bacon, diced, fried crisp, and drained
1 cup Wishbone Italian Dressing

Place prepared salad green in large salad bowl. Sprinkle with onion rings and bacon. Pour on dressing and toss to cover. Serve at once. Serves 6 to 8.

ASPARAGUS SALAD

10 or 12 stalks fresh asparagus, cooked, or two 8-oz. cans.
¼ cup French dressing
¼ cup pimiento, cut in strips
4 tablespoons sliced ripe olives
Leaf lettuce

Drain asparagus and sprinkle with dressing. Chill for at least an hour. Arrange asparagus on lettuce. Lay strips of pimiento across asparagus. Sprinkle with ripe olives. Serve at once. Serves 4 to 6.

BEETS AND BEET GREENS

3 lbs. tender young beets with tops
water to cover
2 tablespoons butter
2 tablespoons lemon juice or vinegar

Wash beets and beet tops. Place in pan and cook in water until tender. Drain. Skip skins from beets, slice or leave whole. Chop greens in bowl. Place beets on top. Place melted butter on top and sprinkle with lemon juice or vinegar. Serves 4.

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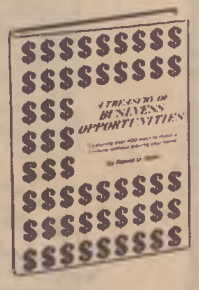

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SCRAMBLED EGGS AND GREEN ONIONS
6 eggs
8 green onions, thinly sliced
2 slices bacon, diced and fried crisp
½ teaspoon salt
¼ teaspoon pepper

Place bacon in skillet and fry until browned and crisp. Remove to bowl with slotted spoon. Set aside. Beat eggs slightly with a fork. Season with salt and pepper. Add onions and cook in skillet in bacon fat over low heat, stirring as egg sets. When all is set, place in serving dish. Sprinkle with bacon. Serve at once. Serves 4.

DANDELION SALAD
4 cups (packed) young dandelion leaves washed and dried
¼ cup green onions, chopped
2 hard-cooked eggs, sliced
½ cup French dressing

Place prepared dandelion greens in salad bowl. Sprinkle with green onions. Toss to coat with dressing. Garnish with eggs. Serve at once. Serves 6.

FRENCH PEAS
1 lb. fresh peas
1 leaf lettuce, large
1 sprig fresh mint
½ teaspoon salt
1 tablespoon butter or margarine

Shell peas and place in half-inch boiling salted water; add lettuce leaf and mint. Cover and cook over low heat for 10 to 15 minutes or until peas are tender. Remove lettuce leaf and mint. Add butter. Serves 4.

WATERCRESS OMELET
1 cup watercress leaves, chopped very fine
¼ teaspoon pepper
1 teaspoon vinegar
½ teaspoon salt
8 eggs
4 tablespoons butter or margarine

Mix together the watercress, salt, pepper, and vinegar. Beat eggs until well mixed in large bowl. Add watercress. Heat a skillet over high heat and add butter. Turn pan to coat bottom and sides with butter. Pour in omelet mixture and stir eggs rapidly until top sets. Fold omelet and turn out on a platter. Serve at once. Serves 4.

DANDELION GREENS
1 quart fresh dandelion greens
4 slices bacon
2 cups water
½ teaspoon salt

Prepare dandelions for kettle by looking over and washing three times. Dice bacon and put in kettle. Place greens in kettle. Add water and salt. Cook until tender, stirring often. When done lift greens from kettle to serving dish. Serve with vinegar, if desired, or eat plain. Serves 4 to 6.

VIOLET GREENS

Pick enough leaves of the violets and pull off stems. Wash well and cook like other greens in small amount of salted water for about 10 minutes, or until tender. Serve with butter and lemon juice, or plain. □

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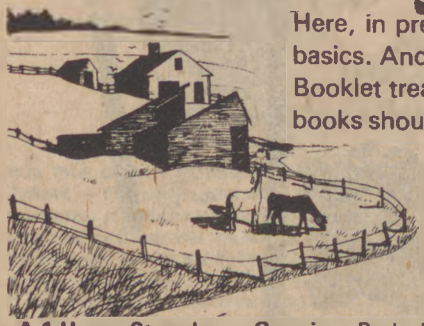

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By Dennis King

How to Build Log-End Homes, by Robert L. Roy, (Drake Publishers, Inc., New York.) $6.95.

I've never been too crazy about log-end houses, but I admit I don't know why. After reading a new book on the subject, I've changed my attitude. In **How to Build Log-End Homes**, author Roy does an excellent job of both explaining the technique, discussing its pro's and con's, and convincing me that the pro's generally outweigh the con's.

Roy and his wife built a log-end home in upstate New York after doing considerable research on the technique. They toured Ontario's Ottawa Valley where log-end construction was and still is common, to learn what they could. Roy suggests using log-end masonry to fill in the spaces between a strong post and beam frame, because logs and cement do not bond and this makes poor walls to support a load.

One problem with the Roy's house is that they used only nine foot long logs which gives them about a R-12 wall insulation. This may have been good enough a few years ago but certainly is not today. Roy discusses this in his article in this issue of *Farmstead*, and recommends 16-inch thick walls for northern climates.

The meat of the book contains detailed step-by-step instructions on framing and log-end masonry, with ample illustrations. The book ends by frankly discussing the problems and pro's and con's of the method.

Generally, then, this is a very useful and frank book and with the addition of Roy's article in *Farmstead*, you should be able to both make up your mind if you want to use the method, and obtain the details of how to do it. □

By Jay Robbins

Not so long ago my wife and I moved into an old, uncared-for house, complete with its neglected, weed-overrun yard. After securing the house from the upcoming winter weather, we went to work investigating the overgrown corners of our lot. What a delight to discover raspberries, strawberries, a MacIntosh apple tree, and a fair representation of other fruits, albeit untended for at least five years. Being total novices in the pomological arts, yet wishing to rejuvenate this unexpected legacy while adding fruit types and varieties, we decided that a good book or two on the subject would be a wise investment. Our search for the ideal book has led us to the following titles:

Fruits and Berries for the Home Garden, Lewis Hill, (Alfred A. Knopf, Inc., N.Y., 1977, $10). This is undoubtedly the best single-volume fruit and berry book available. Written by a Vermonter whose love for his subject matter stretches back over 30 years, this book stresses methods based on the practices of this country's early orchardists; annual fertilizing, pruning, and insect control.

The layout of the book, with each chapter broken up into seems to flow off the page like sap in springtime. Numerous photos and drawings help this process.

If one were to open the book in the middle, the general information on growing fruits and berries would be on the left, while the specifics would be on the right in chapters dedicated to apples, plums, pears, peaches, nectarines, apricots, quinces, the cherries, raspberries, blackberries, strawberries, grapes, blueberries, gooseberries, elderberries, currants, and temperate nuts.

In the general information sections, a few words of caution and many of encouragement are interwoven to give one literally all the information necessary to decide what varieties to grow, how to buy or propagate, and how to plant, care for and harvest. One chapter that I found most useful is the one entitled, "Planting the Tree and Getting It Off to a Good Start." Perhaps this is because Lewis Hill's belief, that "knowing what you are doing is very important because the first years in the orchard set the course for the next 50 or more", really comes through.

Soil structure, condition, and fertility are all discussed with both organic and chemical solutions given. Lewis Hill himself is the middle-of-the-road school, he is a firm believer in healthy organic soils, deep mulches, recycling garden wastes, and a *little* chemical fertilizer if the tree seems to lack something. Full-fledged attacks of bugs are fended off with the spray gun.

Spring and summer maintenance programs of pruning, thinning, and spraying are discussed in the first half of the book, as are pollination ("Sex and the Single Tree"), disease and insect control, and physiological problems brought on by environmental problems. The well-illustrated chapter on pruning and the one on reviving old orchards were of great help in transforming my own yard.

The second half of the book, with its chapters on each fruit, contains the appropriate information on hardiness, rootstocks, culture, pruning, pollination, diseases and their control, harvesting, and varieties (by climatic zone), with a few comments on their character. An added bonus is the appendix, which gives recipes, listings of fruit organizations and magazines of nurseries (with an indication of what they offer) and of sources of orchard supplies and information on the various varieties of dwarfing rootstocks.

Lest I give you the impression that this is the "ultimate" fruit and berry book let me say that I do feel the book has one failing and a few shortcomings. First the failing. There is *no* bibliography for those wishing to seek further information. Now the shortcomings. I personally wish that Mr. Hill had devoted an additional page or two apiece to the matters of espalier techniques, composting (although most of this information is easily obtained elsewhere), the various organic fertilizers, the natural control of insects, and photographs for use in the identification of problem insects (those that are printed are top quality). The index could be more complete. And too, anyone suggesting the use of nonorganic insecticides and the like has a responsibility to devote a little space to their proper handling and storage.

I hope you can excuse Mr. Hill, as I have, for these few imperfections. Perhaps he was putting the finishing touches to **Fruits and Berries for the Home Garden** during the wrong season and was distracted, for as Lewis Hill writes:

> An orchard in bloom is pleasurable to more than two senses. The birds also like to stay near the fragrant beauty, and their songs and chirps blend cheerfully with the thousands of buzzing bees. No fruit grower should ever become too busy to pause for a few minutes or even hours to enjoy this experience. Soon the petals will fall and the new fruits will begin to form. The birds will start to build their nests, and the insects will commence to hatch. Everything is at work and so, too, must be the orchardist.

Grow Your Own Dwarf Fruit Trees, Ken and Pat Kraft, (Simon & Schuster, N.Y., 1974, $1.95.)

For those people wishing to take the dwarfed tree route (root?), this penny-a-page book is a must. The information throughout is excellent, with especially good sections on container gardening, espalier techniques, old varieties (and sources), and especially hardy varieties (and sources).

There's a chapter on "success tips" that will save you lots of time and anguish. You will find the month-by-month calendar of activities for the homestead orchardist to be helpful, I am sure. For growers with organic preferences, there is good information on biological sprays and where to get them.

Grow Your Own Fruits and Vegetables, Laurence D. Hills, (Faber & Faber, Ltd., London, 1973, $9.50.)

Laurence D. Hills is the direct-secretary of The Henry Doubleday Research Association in England and has long

been recognized as one of "the" authorities on organic gardening. Though this book is English and, therefore, not totally applicable to the growing conditions we face, you will find excellent information on the organic methods of prevention and treatment of insects and diseases. The sections on pruning, management, and the nutritional value of fruits are also very well done.

Strawberries: King of the Fruits, M.E. Boylan (Apex-Health, Rome City, IN, 1974, $3.00.)

This smallish paperback contains good sound information on strawberry culture, especially when it comes to organic suggestions for dealing with insects and diseases. The layout could be improved, however, and an index would sure be handy, for quick access to specifics.

Other Pome Tomes of value are:

Tree Fruit Production, 2nd edition, Benjamin Teskey and James Shoemaker, (AVI Publishing, Westport, CT, 1972, $20.00.)

Small Fruit Culture, 4th edition, James Shoemaker, (AVI Publishing, Westport, CT, 1975, $19.00.)

For those contemplating the set-up of what they hope will be a money-making fruit or berry operation, I highly recommend the appropriate one of these two very readable texts. They stress recent research and put a heavy emphasis on commercial operations and chemicals, yet they contain all of the basics as well. You can imagine how much information is contained on apples in the 100 plus pages dedicated to this fruit. A separate chapter is devoted to dwarfed apples and pears.

Each chapter is confined to a single kind or type of fruit or berry and discusses in depth the various cultivars (varieties), rootstocks, propagation, location and site, planting the orchard, training and pruning, soil management, fertilizers, seed and fruit development stages, thinning, handling, transportation and storage, recognizing insects and diseases, lots of other pertinent particulars, and an extensive bibliography. The books are well laid out and thoroughly indexed.

Advances in Fruit Breeding, Jules Janick and James Moore, editors, (Purdue University Press, West Lafayette, IN, 1975, $25.00.)

This book has separate chapters for *all* of the temperate fruits and nuts, containing information on origins and early development, history of improvement, breeding objectives, techniques, systems and methodologies, breeding for specific plant and fruit characters, achievements and prospects, and an extensive bibliography of cited materials. □

By Russ Bodwell

There are at least 20 poultry books on the market today, as well as a section on poultry in most general homesteading books. In my opinion, most of these books are not worth the money asked for them. The purpose of this review is to point out what books should be in a basic chicken library, and why I feel they belong there.

Let's start with the "general" poultry books.

The best is **Natural Poultry Keeping** by Jim Worthington (Crosby Lockwood Staples, London, 1960, $4.25). To the best of my knowledge, everything Mr. Worthington advocates will work. The problem with this book is the difference in climate between England and here. For that reason I would recommend a different type of housing (see spring, 1978 issue of *Farmstead*). Also, with our limited grazing time, his system of feeding (heavy emphasis on green food) would be harder. Not impossible, just harder.

Even with the above exceptions, **Natural Poultry Keeping** is still the best "one book library" for the average small flock owner.

The other exceptional general poultry book is **Chickens in your Backyard**, by Rick and Gail Luttmann (Rodale Press, Pa., 1976, $3.95). This work is an excellent companion volume to **Natural Poultry Keeping**. Its principal advantage is in the area of feeding, where the more "normal" methods, i.e., mixed feeds, may inspire somewhat more confidence. The other point in its favor is that they will often list several alternatives, whereas Mr. Worthington's book is more "how-I-do-it" oriented.

Poultry Houses and Appliances edited by Dr. J. Batty and Mrs. M. Batty (Spur Publications Company, England, 1976, $7.95.) This book covers most of the designs the backyarder will be interested in. The same information is available elsewhere, but not so well explained, nor so well illustrated in any other single volume. With this book, even the most minimally skilled can build anything needed for their henhouse, from nestboxes and feeders to the house itself.

The book on diseases of poultry that I recommend is **Veterinary Guide for Farmers** by G. W. Stamm (Popular Mechanics/Hearst Corp., N.Y., 1975, $9.95 hardbound).

This is excellent on the symptoms and has short questions to help you retain the information. It is weak on prevention and treatment, but the major need of the backyarder is to put your mind at ease when the occasional bird dies, as it *will*. In 99.9 percent of the deaths that will occur in our flocks, nothing serious is wrong, and if it is, you need more help than a book can give.

And, finally, to round out your basic library is one just for fun. **Chickens, Chickens, Chickens** by Peter R. Limburg (Thomas Nelson, Inc. N.Y., 1975, $6.95). Insane, informative and just plain fun is the best way to describe the book. It takes one all the way from the old problem about which came first, the chicken or the egg, to the latest scientific developments. Chickens have had a fascinating history, well worth reading about. For instance, did you know that a chicken had the title role in an opera? Neither did I! LeCoq d'Or (the Golden Cockerel) by Rimski-Korsakov. A treasure house of interesting (and often useless) information.

top farm states

The top 10 agricultural states in 1976 in terms of sales of farm products were California, Iowa, Texas, Illinois, Minnesota, Nebraska, Kansas, Wisconsin, Ohio, and North Carolina.

labor gets the lion's share

Labor costs became the biggest single component in the cost of marketing farm foods in 1977, topping the farm value of those foods for the first time. Total labor costs for processing, wholesaling, and retailing are expected to exceed $58 billion—from a food marketing bill estimated at $124 billion. USDA economists say the farm value will probably remain near $56 billion—a level maintained since 1974.

Agricultural Situation, 11/77

wood energy

Dixville Notch, N.H. is about to become one of the first communities in the country to be completely lighted and partially heated with wood. A boiler will be fueled with wood chips from local logging and pulp mill operations and will power turbines, to produce electricity for a rubber company, a 240-room hotel, a ski area, a country club and the town's half-dozen homes. The hotel and rubber company will be heated entirely with steam.

Conservation News 2/15/78

hydro power

A recent Corps of Engineers study indicated that there are 49,000 dams in existence in the country which could be, but are not now, used for hydroelectric power. These 49,000 dams could produce more power than all the nuclear plants in operation today put together.

solar energy for farm buildings

Marvin Hall, an agricultural engineer at the University of Illinois has been designing solar roofs for farm buildings for the past 10 years. His simplest design involves a steel roof painted black, with an attic to trap warm air and ducts or fans directing the heated air to the lower floors. Solar roofs on log houses cut heating costs 25 to 50 percent. Similar research is being conducted at many universities to adapt solar designs for heating farm buildings and drying grain.

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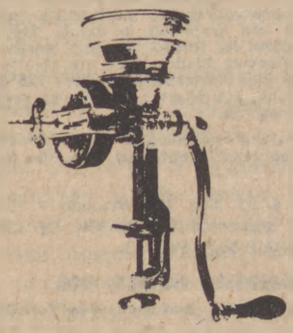

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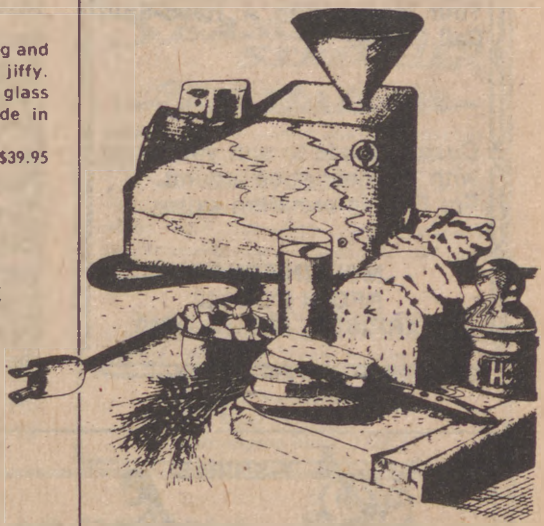

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alcohol—burn it, don't drink it

Brazil is the only country in the world taking the alcohol route to energy independence. (No they're not drinking themselves into a stupor while they worry about what they'll do when the oil runs out. Sometimes this appears to be the U.S. route.) They plan to burn it in their cars and tractors. In some parts of the country, gasoline is already being spiked with 10 percent alcohol. By 1985, Brazil plans to be using 20 percent alcohol in their gasoline nationally. Modern carburetors can use up to 20 percent alcohol without being redesigned. After 1985, Brazil plans to increase alcohol use even further by producing cars that can run on pure alcohol. The advantages of alcohol over gasoline is that it burns much cleaner and is renewable. Most Brazilian alcohol will be produced from sugarcane.

Brazilian alcohol will be produced from sugarcane.

report a polluter

Two professors from Pennsylvania State University and a chemist are each $3,333.33 richer because of a bounty they received for reporting four Pittsburgh companies for water pollution. A political scientist and a biologist took samples from the rivers around Pittsburgh which resulted in $20,000 fines to the corporations. Under the 1899 Rivers and Harbors Act, the teachers were entitled to half of any fines levied. They divided the $10,000 equally among themselves and the chemist who analyzed the samples.

Conservation News, 1/15/78

air pollution comes home

Two University of California scientists have just completed initial studies on six single-family homes in the San

Francisco Bay area and have concluded that the air inside the average home is often more polluted than the air on a smoggy day outdoors. This raises questions about new energy conservation building codes which would reduce the air exchange rate in homes from about one air exchange per hour to only one half to one fourth air exchange per hour. According to the study, most household pollutants come from aerosol sprays, cigarette smoke, organic compounds used in cleaning and cooking, and poorly constructed and serviced gas appliances.

U.S. quality of life

The latest survey taken by Louis Harris indicated that 43 percent of Americans now think the quality of life in the United States is worse than it was 10 years ago. Thirty-four percent thought it had improved while 19 percent said they felt it is about the same. One of the main reasons for the pessimism is the sense that the physical environment has not improved, despite efforts to clean up the air and water. Other factors cited were high inflation and unemployment, and irritation over poor consumer product quality and safety.

bad news for do-it-yourself mechanics

Under pressure from Washington to keep backyard mechanics from tampering with government-ordered emission control devices, Detroit auto makers are proposing to permanently seal the hoods of new-model cars. The industry has already developed a tamper-proof "sealed" carburetor, and just two years ago, Pontiac sealed the hood of an experimental compact. The sealed hood vehicle may go into production by the 1980's.

mouse poison

Lyndon Everback, of Louisville, Kentucky, has discovered a new way to control mice. He put refined sugar in pills along mouse runways, and at first the sugar disappeared rapidly. He calculated that his mice were consuming 20 grams each per day. After 22 weeks, the sugar consumption began to decline. The mice had abnormal growths on their bodies and stopped breeding. After nine months, the mouse problem was completed solved.

Extra, 3/78

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WILD MAINE VALARIAN ROOTS WANTED. Remember us for July-August harvest. Highest price paid for washed clean roots. (VALARIAN is a medicinal nervine root plant, growing wild & abundant in Blue Hill, ME and area, all along the roadsides, in open fields, & sunny locations. See your fieldguide identification book for pictures & description). Ship your Wildcraft Roots & Herbs to: L.A. Sunchild Herb Co., Ben Hur, Ark. 72856 E1P

20 MINNESOTA ACRES in Superior National Forest, with pond and 2 lakes within one mile. Surrounded by Federal land for hunting and fishing. Gravel Road Access. $5000.00 Gary Bernardoni, 820 Swift Avenue, Oglesby, IL 61348 E1P

HONEY MADE FROM ORANGE BLOSSOMS, Buckwheat, Basswood, Tupelo, Sourwood and many others. Makes a wonderful present. Send for price list. The Honey Plant, Box 457B, Clear Lake, Wisc. 54005 E4P

2nd ANNUAL FREEDOM TOWN FAIR - Saturday, June 17th. Rain date - Sunday, June 18th. Parade at 10:00 a.m., all day events, supper at 5:00 p.m. and street dance at 8:00 p.m. Fun for all ages. E1P

RAWLEIGH PRODUCTS, sent prepaid, anywhere in U.S. Catalog & price list $3.00. Chet Williams, The Rawleigh Man, Bristol, VT 05443 E1P

MAKE 36 PINTS delicious dill, bread-butter, mixed pickles and chili sauce. Easy, economical. Perfectly blended herbs/spices. Best recipes included. Pickling Sampler $3.25 ppd. S.A.S.E. FREE Brochure. Frog Park Herbs, RD #2-F, Waterville, NY 13480 E2P

COOKING WITHOUT UTENSILS...no cleanup! Tested techniques...mouth watering recipes. Indoors or outdoors. $2.00. Production Enterprises, Box 414H, Kansas City, Missouri 64141. E1P

EARN LEGITIMATE COLLEGE CREDITS AND DEGREES AT HOME - Many subjects - Agriculture through Zoology - Faster and less expensive - Amazing Details: EXCEL-F., 323 Franklin #804/E-22, Chicago 60606 E1P

ATTENTION PROPERTY OWNERS. Greatly reduced prices on a few prefabricated wooden GARAGES manufactured last year. Various sizes. Small deposit will hold. Will deliver or install. 100% FINANCING. For sizes, prices and plans, call free 1-800-452-1940 8:00 A.M. to 8:00 P.M. or write Factory, P.O. Box 2106, Augusta, Maine 04330. E1B

GOULDSBORO - WEST BAY POND. 8.07 surveyed acres with 555' pond frontage. 65 year old repairable farmhouse sits high on a knoll overlooking beautiful West Bay Pond. Spring, root cellar, garden spots with southern exposure. $12,000. As little as $2,500. down. J.C. MILLIKEN AGENCY, INC., Prospect Harbor, Maine 04669. 207-963-7941. E1P

FOR SALE, 100 acre farm, two complete dwelling-central heating - panoramic view - barn & equipment - 850 apple trees - 50' x 235' greenhouse - Established clientele - Cause of sale: Deceased. For information write to: Mrs. Gust. Cordeau, Austin, Brome Cty. JOB IBO, Quebec Prov., CANADA. Tel.: 819-843-1960 E1B

DON'T DIE WITHOUT A WILL! Complete kit prepared by an attorney. Instructions, executors duties, will forms all in sturdy folder. $3 each, two kits $5. Postpaid. H-G Enterprises, Dept. F, Clarklake, MI 49234. E2P

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COOPERATIVE COMMUNITY 250 a. land trust. Agriculture, aquaculture, forestry, work for social change, children. Seek others. Leavitt Hill Farm, New Vineyard, ME. 04956 E2P

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NATURAL STONE HOUSE. Gather rocks free, build lowcost home, outbuildings — in one summer! Need pickup, handtools — no experience! Illustrated "HOUSE OF STONE" manual tells how, $6. Satisfaction Guaranteed. Stonehouse, Box 488, Sweet, Idaho 83670. E1P

FREE SOURDOUGH flapjack recipe. Send stamped addressed envelope. Art Carlson, 190F Sullivan, Columbia Falls, MT 59912 E1P

EXTEND GARDEN HARVEST. Save Money! Build portable 8x10 greenhouse and knockdown coldframe. Store off season. Plans $2.00. Guaranteed. R-WAY, Box 323FS, Valley City, Ohio 44280 E3P

MAKE $156,000 AN ACRE growing Jerusalem Artichokes. Report and tuber prices $2.00. "Roots" P.O. Box 574, Botsford, CT 06404 Sp2P

WANTED: Young Christian Woman with farm or farmett. I am 31 yrs. old., 6'1" tall, 230 lbs. In need of Family Life. Non-Drinker, No-Drugs, and shy. Prefer young lady in the state of Maine, Vermont, New Hampshire or Minn. Write to: H.C. Adams, 1 Laurel Road, New Canaan, CT 06840 Sp3P

MUSHROOMS — How to Buy and Store. Recipes. Grow Your Own. S.A.S.E. for information. TODD MUSHROOMS, Box 26F, Nottingham, PA 19362 Sp6P

REDISCOVER THE JOY OF NATURE thru the pages of rustic, handcrafted "Backwoods Journal", Box 126-F, Paradox, NY 12858. Interesting, attractive and unusual quarterly from an Adirondack Mountain log cabin! Homesteading, wildlife, wildflowers, birds, hiking, conservation. Correspondence section for outdoor-minded. $4.00 per year. Recent sample copy $1.00. For those who truly love Nature. Sp2P

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WRITERS/POETS MARKET NEWSLETTER. Three issues $2.00. Lifeline, Cobalt, Ontario, Canada POJ 1CO H6P

HYDRAULIC LOT SPLITTER PLANS, complete assembly and detailed drawings. Send $4.00 to Fabsons Engineering, Box 635F, Leominster, MA 01453 H5P

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ELMSVILLE, NEW BRUNSWICK, CANADA 15 miles from Calais, Maine. Parcel #1. 208 acres bordering the Digdeguash river and on Route 760, old farmsite, mostly wooded, with a 4 year old camp...blueberry fields, within 5 miles of the ocean. Taxes $193...Asking $19,000 or best offer.
Parcel #2. 100 acres of woodland bordering on the Digdeguash river a few miles downstream of Parcel #1, within 1 mile of the Ocean. Taxes $182. Asking $16,000, or best offer.
Both parcels are for sale by owner. Contact Larry Forbes, 253 East Main Street, Orange, Mass. 01364 E2P

WHISTLE STOP FARM, Purebred French Alpine, Saanen, Toggenburg Dairy Goats. Kids and Milkers for Sale — Spring '78. S. Homer, Stockton Springs, ME 04981 (207) 567-3108 Sp2P

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APPRENTICE WANTED for 20 acre homestead, summer 1978. Let's exchange info. Healey, Star Route, Norwich, N.Y. 13815 E1P

BLACK FLY REPELLENT, old Indian remedy. Two simple inexpensive ingredients. Non-chemical. Once a day application. For the formula send $2.00 plus S.A.S.E. Box 1171 No. Conway, NH 03860. E2P

SPROUTFARM automatic grain sprouting systems for year round animal health and productivity. Sunsprout Systems Inc. Dept. FM1 Box 425 Fairfield, IA 52556 E1P

ALFALFA SPROUTS automatic systems for commercial production. Sunsprout Systems Inc. Dept. FM1 Box 425 Fairfield, IA 52556 E1P

NORRIDGEWOCK, 74 surveyed acres, $10,500.00. After Five call 583-2916. E2B

LIVESTOCK HORN KNOBS & BALLS for show and safety. Made of solid polished brass in five sizes. Peripheral Industries, 439D Washington Road, Woodbury, CT 06798 E1P

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EAGER BEAVER WOOD SPLITTERS 19 inch model $499.00 26 inch model $699.00 Apple Press attach $159.00. Eager Beaver, Box 34A, Sharon Springs, NY 13459 E2P

SOLAR GRILL lets the sun do your cooking! Portable...inexpensive...easily made. Plans $3.00. Production Enterprises, Box 414H, Kansas City, Missouri 64141. E1P

TURN BULLFROGS INTO GREENBACKS. Frog Farming is interesting and profitable. Informative brochure $2.00. Slabaugh Frog Farm, Rt. 3, Dept. A, Poplar Bluff, Mo. 63901 Sp6P

NEWBORN BABY loves riding close to parent in this cozy sling. Can use with backpack. $12.95 in spring green, slate blue, or camel cotton corduroy. KanGoToo Baby Carrier, Box 1570-G, La Grande, OR 97850 Sp1P

GET THAT HOUSE for very little down and very little afterwards. Never before published methods used by real estate professionals. Legal ethical and hassle free. Insurance company or banks loss is your gain. $1.00 brings complete information, examples, instructions. F.T.S Corp. Rowley Ma. 01969 Sp1P

EPICURE SEEDS **Choicest table varieties from venerable seed houses of the old world. Original packets.** Have you ever savored tender filets of that supreme French bean, Favorrel? Petits pols plucked not from a can but from your own vines? Crisp, crackling cabbages as round and firm as a Dutch cheese? Tiny, bitesize Brussels sprouts and meaty broad beans from England? Now enjoy these and more vegetable delicacies from top European seedsmen. 24-page cat. 25¢. Epicure Seeds. Ltd. Dept. IB Box 69, Avon, N.Y. 14414 W2P

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"COMPLEATLY" SELF-SUFFICIENT FOOD-PLANT PROPAGATION, by Herm Fitz, botanist, explains propagation of 150 vegetables, fruits, berries, grains, nuts by home-grown seed and vegetative methods applicable to each plant. 139 pages, profusely illustrated, extended references. $4.95. Box 272, Blue River, Oregon 97413. E3P

SEWING MACHINES: Electric, treadle, hand crank. Parts, accessories, expert repairs for all makes and models. Free list: RISMCO. Box 2172, Prov., RI 02905 Sp2P

UNIQUE OPEN FACE SANDWICH recipe, $1.00, S.A.S.E., Harrison, 7184 S. Adrian Hwy., Adrian, MI 49221 Sp6P

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WANTED: 5 to 40 acres, rural Maine. Organized or unorganized town, secluded, no land restrictions. Any land already with an older home, cabin or outbuildings would be desirable but not a requisite for purchase. Write: P.O. Box 205, Lynnfield, MA 01940 Sp2P

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QUILT AND CRAFT BOOKLET — 20 Easy to follow patterns $2.00. Nature Craft Booklet — Unusual different ideas $2.00. Limited supply. Send money order or certified check only and S.A.S.E. G. Deitch, RFD #2, Colchester, CT 06415 Sp2P

"JERSEY MILK IS JUST NATURALLY A BETTER MILK." For a family cow contact: Springdale Farm, Colby Whitcomb, R. #2, Belfast, ME 04915 (207) 342-5446 Sp5P

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Your ad in this section costs only 50 cents a word. You get a 10% discount if you run the same ad in two or more consecutive issues. Closing dates are: Feb. 1st for Spring; April 1st for Early Summer; June 1st for Summer; Aug. 1st for Fall; Oct. 1st for Holiday; and Dec. 1st for Winter.

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Built with the conviction that beauty and efficiency can be combined without compromise, the Defiant and the Vigilant offer you every feature essential to anyone serious about heating with wood.

We designed the Defiant woodburning stove and its smaller brother, the Vigilant, to embody the simple grace and functional efficiency seen in so much of the Early American architecture surrounding us here in the North Country.

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Fully baffled, with preheater air passages

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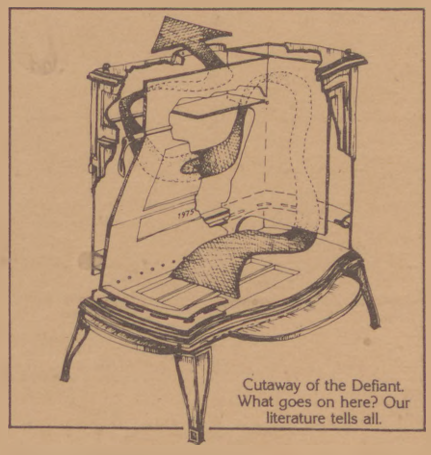

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The DEFIANT: Probably America's most talked-about woodstove

The Defiant will accept logs up to 24 inches either from the front or through its side loading door. It will deliver up to 55,000 btu's and heat up to 10,000 cu. ft.

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A flaming rainbow of color—year after year—endlessly! Guaranteed to start sprouting colorful leaves within seven days. Complete with bulb plus gleaming golden pot with soil, easy to grow instructions

MAY GOOD LUCK SHINE ON YOU EVERY DAY OF YOUR LIFE!

Grows over 100 possible color combinations all year long!

If you think four-leaf clovers and rabbit's feet are lucky, wait till this thrilling Rainbow Plant enters your life!

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You get everything you need to grow this miracle of nature including bulb, gleaming golden pot, potting soil, and instructions all at the incredible price of $1 on our risk-free, money-back guarantee. So order this gorgeous, ever-blooming, ever-green, ever-red, ever-gold, ever-everything plant today. May your Pot O' Gold plant bring you all the happiness, health, and wealth you ever dared hope for—and more!

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Please rush me_____**Pot O' Gold Rainbow Plant(s)**

- ☐ One #91367 for $1.00 plus 35¢ postage and handling.
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