NATURE AND US

A Symbiotic Relationship

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THE EARLY YEARS

Discovery of the Tree Farm

For years I enjoyed camping in the White Mountains. Because real estate is usually a good long-term investment, my first wife Carol and I decided we might as well invest in something we could enjoy. In 1975 we started searching for some land in the Tamworth - Sandwich NH region at the southern edge of the White Mountains, a very picturesque area. The drive from our house in Massachusetts would be reasonable, only a little more than two hours.

Drawing us to the area was the fact that Carol's family already thought this was "God's Country". Her grandfather's ashes were spread on Mt. Whiteface in Sandwich, and her Uncle George had retired to Tamworth. Even before we had thought of buying land in the area, our son Richie had been baptized in Tamworth. Our minister had a summer residence there as well as a mountain cabin where we had stayed and enjoyed a ski-weekend. Carol could even remember being pulled on a toboggan to the cabin when she was just a little girl. We were already tied to the area!

Bob Lloyd was the real estate person we dealt with. Like many people living in the area, he originally lived in Massachusetts but had family roots in Tamworth. When the company he worked for folded, he welcomed the excuse to move "home" to the White Mountains.

Bob loved to walk in the woods, so he was an ideal person to guide us in purchasing land. First he showed us land that was too wet for our taste, land that was bisected by high tension wires, and then a gorgeous 60 acre parcel for a whopping $80,000. It had two ponds, one small and shallow (good for wildlife), and a large one (good for swimming). The woods were nicely cared for, with trails and woods roads that were driveable.

We fell in love with the land, but the price was much higher than our upper limit, so we told Bob "no." But after thinking about it for a day, we decided we could sell off part of it or maybe even buy it in partnership with someone. It was just too nice to pass up. When we called Bob Lloyd he said it was still available, so we mailed a deposit. A couple of days later Bob called and told us he had been wrong - the land had been sold by another broker before our deposit arrived, so the land was not to be ours.

We were disappointed, but the incident served to convince Bob that we were serious, and fine tuned his idea of the type of land we wanted. About a month later he called us to say he just learned about a parcel that would be for sale, but had not even been listed yet. Stan Coville, a local forestry person, had accumulated a fair amount of land over the years, and was starting to sell some.

The parcel was 160 acres on Rt. 113A in North Sandwich, part of the town of Sandwich, NH., close to Mt. Whiteface. By coincidence, Uncle George lived on the same road about three miles away in Tamworth. The location was ideal. This section of Route 113A is also called Chase Road, the name I will usually use since it sounds friendlier and folksier than the route number.

Bob took us down a woods road that began at a neighbor's driveway, and soon petered out, becoming a narrow path that was in the process of being reclaimed by the

woods. The goal of our walk was Mill Brook, a pretty stream flowing rapidly for September.

Then we retraced our footsteps, got back in the car and drove up Rt. 113A to a small road, near the midpoint of the property's frontage. It was a nice substantial gravel road, but ended abruptly in a gravel site 100 yards in from the highway. We later learned that the road was in such good shape because the abutter on the east side of the property had permission to use the gravel to make a long driveway to his future house site. Bill Read, the abutter, was a nephew of Bob Lloyd (I never cease to be amazed how many people in these parts are related).

From the gravel site, we bushwhacked through the woods. I soon had no idea where we were headed and was very impressed that Bob didn't even need a compass. After considerable walking we came to an interesting ridge: about 30 feet high, 200 feet wide at the base, and ten feet wide at the top. We walked along the ridge for a quarter of a mile. By trying hard at one spot and using our imagination, we were able to convince ourselves that, except for a "few" trees, there was a potential view of Mt. Whiteface.

Bob told us that we were walking on an esker – a mound of gravel left by glaciers thousands of years ago. After we came off the esker, we stomped around for another couple of hours. Without trails it was not easy going, and we often came to wet areas that caused detours. Overall, my impression was that one third of the land was wet (wet by my definition meant too wet to build on), but the other two thirds had potential.

In our discussion on the way home, I discovered that Carol didn't like the land but thought it would be a good investment. I felt that, while it didn't match up to the two-pond parcel we had almost bought, it was such a good buy that it didn't matter. It was "only" $45000 for the 160 acres. Even if just 90 acres were dry land that was $500 per acre, a very reasonable price for something with so much road frontage. We decided to purchase the land for its investment potential – after having spent less than 4 hours on the 160 acres. What babes in the woods! I had no idea how much we had left to luck. Fortunately, it turned out that luck was indeed with us.

When I purchased the land in 1975 I was 33 years old. With hindsight, I was very fortunate to purchase it at a relatively young age. I have had the luxury of maturing with the land. Just think, having owned the land for three decades, many of the trees have added more than thirty feet to their height. Also, I have been able to see the effects of thinning out weed trees. The favored trees that were kept have not only added height, they have spread out to fill the openings that were created. While I have also undergone physical changes in that time, I prefer not to dwell on them! It is my developing closeness to the land and nature that is most meaningful.

The Cooperative Extension Service

When we made the offer on the land, I had little knowledge of forestry. Bob Lloyd, our real estate agent, told me about helpful government agencies. So even before the land was legally ours, I began to learn about forestry, writing to various sources of information. One of the places I wrote was the Carroll County Cooperative Extension Service.

The Cooperative Extension Service, established in 1914, is a partnership between the US. Department of Agriculture and the land-grant universities. Many of the programs extend educational opportunities in agriculture to the community, such as providing a

County Forester. Other programs, specifically human nutrition and home economics, are concerned with the health and welfare of the people.

Of particular interest were the free services of County Foresters, available to private, municipal, and industrial lands, which offered me two benefits. First, I, as a new land-rich money-poor forest landowner, had a convenient source of free information. But even more importantly, because the forester has no financial incentive for recommending one course of action over another, he is influenced only by what is best for the environment and the landowner.

Peter Pohl, the County Forester for Carroll County, responded to my letter requesting help. He replied that he would be happy to meet with me and would offer advice on our forestland – as soon we actually owned it. Included in Peter's response was a circular entitled *Introduction to Forest Management in New Hampshire*, a good resource for beginners like me. The main thrust of its 35 pages was to convince the woodlot owner not to neglect the woods, but to manage them. It listed a variety of land management goals, many of which can be combined. Such goals included improving wildlife habitat, encouraging recreation, producing Christmas trees, allowing personal privacy, and producing wood products (firewood, pulp wood, lumber, etc.).

It remained to be seen which management goals would be important to me, but I definitely planned to manage my woods. They were bought as an investment and a managed investment should appreciate faster than an unmanaged one. If the well-groomed expensive forest property we had lost out on was any example, the work I would do to improve wildlife habitat and increase recreational potential would bring an increase in monetary value to our property.

Peter Pohl

Peter will appear frequently in this book. Since he has influenced the development of this land, it might be beneficial to learn what has influenced him. The following two paragraphs are quoted from the fall, 1982 issue of Forest Notes.

A native of Connecticut, who came to New Hampshire with his family as a sub-teen, he has a strong background for contending with these (new harvesting techniques) and other issues in his North Country domain. He was graduated from University of New Hampshire with a Bachelor of Science Degree in 1966, then obtained a Master's Degree there in Forestry. After serving in the Army Signal Corps in Korea as a lieutenant, he returned to the state and worked for a private consulting forester. In late 1969 he joined the Extension Service in Carroll County.

Six months of temporary duty as Assistant County Forester got "extended', and he became the County Forester in 1971. He has conducted and taken part in all manner of workshops, demonstrations and panels covering aspects of forestry, and has been a member and chairman of the Conservation Commission in Sandwich, his hometown. He has also served on the Town Forest Committee, and Budget Committee, and is a trustee of the Federated Church. He has also been a trustee of the Chocorua Lake Conservation Foundation and of the Tin Mountain Conservation Center, an education organization for schools, in Jackson.

My First Trail

In October 1975, the papers were signed and the land in Sandwich became legally ours. When Carol and I were divorced the next year; she got our home in Massachusetts and I threw my soul into Sandwich. Why did we divorce? Probably a better question

would be “why did we marry”, especially at 21 years of age. With hindsight, I shudder to think how much I did not know back then! Some people do marry at early ages and live happily ever after, but not us. The saddest thing about the divorce, as is true for too many cases, was how it affected the children. Would they have been better off if the marriage continued? Probably not, but that unanswerable question still haunts me.

When the land was purchased, there were negligible trails on it. I was not used to walking through wild forest that looked as if people had last visited it decades ago. I needed to do something to aid in my exploration of my new domain. A fortuitous encounter helped me decide what my first project would be.

I found some surveying tape, (colored nylon ribbon used for marking) tied to trees, and eventually discovered that they formed a straight line; in fact, it was a north-south line. This seemed curious so I set about to find out where the tapes led, not an easy task since the woods were thick. Adding to the difficulties was that I am color-perception challenged[1], the red tape tended to get lost in the green foliage (why don't surveyors use blue?).

To try to follow and mark the boundary line, I discovered the trick of using a 100 foot length of rope. I would lay the rope in a straight line between two of the surveying tapes and use a handsaw (I had yet to use, let alone purchase, a chainsaw) to clear the rope's route so I could sight back along the rope for the entire 100 feet. Then it was relatively easy to drag the rope in a straight line to where the next tape was located. Usually it was no big deal to find the next tape, but once in a while there would be a distance of about 400 feet between tapes – then it was a challenge.

The game of “follow the tapes” progressed slowly. On day two, I passed though a low, slightly swampy area for about 500 feet. I found a small brook, a foot across and a few inches deep surrounded by small trees, mostly hardwoods. Then the land started to climb slightly so that the soil was no longer wet and the trees were bigger.

Wonder of wonders, I came to an iron pipe that had blue tape tied to it – blue as if it knew the color challenged kid was coming to find it. What a sense of accomplishment! I had found a boundary marker. Finding out which corner of the property it marked would have to wait for another day. I did not want to be lost in the woods, even my own woods, after dusk.

The surveying route never reached the quality of what I would now consider a trail. Trying to upgrade this north-south line would have been a lost cause as it went through too much wet ground. But the exercise taught me how to get to a specific boundary location. Knowing accurately where the various landmarks were enhanced the investment value of my land.

Establishing a north-south line through the woods also helped me with my quest to learn the various features of the property. True to my engineering training, I had bisected the problem into two smaller segments of land!

The Trail to the Esker – Erratic Trail

The esker made a strong impression on me when I first saw it, so I decided to access it via a trail. Over the years, the trail has undergone changes of location, quality improvements, and changes of name. The present name is Erratic Trail, and to save confusion that name will be used exclusively in this book to refer to this most important of trails.

[1] I object to the label “color blind” because I seem some colors just fine.

To increase trail work time and decrease driving time, I moved a travel trailer to North Sandwich early in the spring of 1977. But getting it into my planned site on Erratic Trail, 100 feet from Chase Road, wasn't as easy as I had anticipated. Misjudging how late the snow lingered around here, I found Erratic Trail still blocked by a three foot snow bank and the site itself covered in a foot of snow – and it was late April! Fortunately, Don DiFilippe, a neighbor, used his tractor and plowed enough room to get the trailer off the road. A couple of weeks later I was finally able to move the trailer to its home at the gravel site on Erratic Trail. With gas refrigerator, gas lights, and a gas heater, it was nice and comfy. Since there was negligible upkeep and I cut my driving to one round trip a weekend, I had lots of spare time to spend on my favorite pastime – trail making.

The purpose of Erratic Trail was to get from point A to point B and really enjoy the trip. To find a really scenic route, I spent a weekend stomping through the woods, trying to select a trail route – the only constants its start at the "gravel dig" and ending at the esker.

I was happy to discover that this land was almost entirely dry. By the end of the weekend I was able to consistently find the esker, but never able to take the same route twice because of the thickness of the woods. The difficulty was compounded by the fact that I was a babe in the woods. I had never walked in thick woods by myself before and I knew nothing about orienteering.

Now when I plan the location for a new trail, I use a variation of the Hansel and Gretel bread crumb trick. As I walk along a sample route I flag my trail by tying *blue* surveying tape to trees. Then I retrace my footsteps, moving the surveying tape to new locations as I modify my route. This is an interactive procedure, often taking many tries before I am satisfied. In fact, to really get a route that is aesthetically pleasing, I often try to look at prospective routes in different seasons.

But this time I was anxious to get started, so the next weekend I started the trail to the esker. There was only one logical way to leave the "gravel dig" since all other exits either dropped off too steeply, or went up mounds of earth. My selected beginning for the trail was probably the same way Bob Lloyd took me when I first walked the land. I tended to take the path of least resistance – avoiding large trees whenever possible. I had recently purchased a chainsaw, but it was the first I had ever owned and I didn't feel confident using it. Using my handsaw, I turned the path of least resistance into an easily recognizable trail for about 100 yards. Then the path of least resistance turned to the west, away from the esker.

To advance the trail I would have to do substantial work: either cut down a number of large trees, or attack an incredible thicket of small evergreens. Because felling the large trees would leave many tree stumps in the trail, I opted for attacking the thicket. That was a slow process. There was no spot to pile the small trees I cut, and the thicket was too dense to pull the trees off the trail. So I had to drag them back down the trail for a considerable distance. The problem was compounded by some big branches from a large old maple that were laying in the midst of the thicket. After a half day, I finally made it to the other side of the thicket. The rest of the day was spent widening the trail − and so ended the weekend.

During that weekend I had worked very hard. On my drive home to my apartment in North Andover, my muscles ached from unaccustomed labor. But it was a nice feeling. I had made a good start on my quest to put a trail in to the esker. When I arrived at the apartment there was no one to greet me − no one to share my weekends wanderings with.

But I still had my sense of accomplishment and I felt as if the divorce healing process was finally starting. Then, as is often the case even now, I eased myself into sleep by reviewing my work in the woods.

The following weekend as I was admiring my work, a revelation came to me: there were ruts in the trail that had been made when someone logged there long ago, two sets of ruts uniformly apart that only a vehicle could leave. The trail I was putting in actually followed an old logging road! That explained why I was able to select a route that had no trees larger than six inches in diameter. In fact, it also explained the thicket. After the logging had been completed, the logging road would have been sunnier than the surrounding woods; thus seedlings thrived there and eventually grew into the thicket.

I was very excited to realize that it had been a logging road. That gave me a small window into the past when other people had worked in these woods. It also implied that the road might have led some place and perhaps I could make its route passable again. Those people surely knew more about working in the woods than this neophyte pathfinder. The odds were that they chose good sites for logging roads so that their hauling would be made easier. Restoring those roads would not only give me a link with the past, it should also lead me down paths that required minimum work. I wondered how many other old roads I would discover.

Who caused these ruts to be made? A good candidate was Wesley Tewksbury, a local character that lived down the road in the late 1800s. He epitomized the independent Yankee. One of his many areas of expertise was the use of oxen in the woods. In his day, there were many more oxen than horses because they were ideal animals for dragging timber. Take two oxen, each weighing over 1500 pounds and you have the pioneer's version of a tractor. Hitch the oxen up to a log, point them in the right direction, and they got the job done. They didn't set any records for speed, but they could do an impressive amount of work.

On the Esker

In late spring of 1976, my Dad and Uncle Everett helped clear a trail on the top of the esker. Dad, Uncle Everett, and their other siblings grew up in a rural environment, with one of their farms in Heniker, New Hampshire. They found working in the woods with me was a pleasant return to their past.

While Uncle Everett and I used chainsaws, Dad dragged debris off the trail. I was impressed with Uncle Everett being able to start his chainsaw without even putting it down. By watching him work, I picked up a few pointers and realized how much I had to learn about using a chainsaw. I also learned how poor my chainsaw was. I thought it was just a fact of life that if a chainsaw was put down and not used for a couple of minutes, then you had to wait an hour before it could be started again. No way, only with Mickey Mouse saws (real name not used to protect the guilty). But my saw did *look* impressive – big and heavy. Oh well, live and learn.

I was surprised to discover the faint trace of logging wagon ruts along the top of the esker. Why would people with no mechanized equipment bother to log the trees in this difficult-to-access place? In the 1800s when more than half of this area was converted into farmers' fields, most of the large white pines were removed. When the pickings got slimmer, even places like the esker were logged! It must have been worth the effort, which implies that there were some valuable trees on the esker.

It took me two more weekends (by myself) to finish the trail to the mid point of the esker, which became known as Esker Pass. At that spot, a little stream cuts through the esker. On my mental list of things to do, I put *trace the remaining route of the esker.* However, my workaholic self put *add more trails to increase accessibility* higher on the list than tracking down the esker's end.

The Journey to the White Mountains

The drive from the Massachusetts-New Hampshire border to Sandwich is a pleasant trip. About 45 minutes from the Tree Farm, you first view the White Mountains. On a clear day, from 50 miles away on Route 16, you can see Mt. Washington, the tallest mountain in New Hampshire. In spring or fall it can be especially striking – the sole snowcapped mountain.

I leave Route 16 in Whittier and head west on Route 25, passing Mt. Whittier, both village and mountain named for the poet John Greenleaf Whittier who used to spend much time in South Tamworth. Mt. Whittier, part of the Ossipee Mountains, is almost in the White Mountains, but a valley separates them. None of the Ossipee Mountains are over 4000 feet in elevation. The fact that the mountains to the north are substantially higher means that winter storms often deposit much more snow there than at the Ossipee range, and a storm that is rain in the Ossipees can be snow on the White Mountains.

After proceeding along Rt. 25, the route to our Tree Farm turns north along Rt. 113. Shortly after this turn many of the southern White Mountains become visible, including Mt. Whiteface which is close to our land. When I see these mountains again, I feel as if I am being welcomed home and wonder why I have been away so long, even when that time away is only a week.

Getting ever closer, I turn onto Rt. 113A, the road to the Tree Farm. I am certainly prejudiced, but I feel that this road has the best mountain views in the area. As I approach the farm, open fields afford me views of Mt. Whiteface, Mt. Passaconway, and Mt. Wonalancet. As the most imposing mountain from the perspective of the Tree Farm, Mt. Whiteface holds a special place in my heart. It also exerts a strong influence on the weather here. Often at the farm the weather to the north, toward Mount Whiteface, will be clear, while to the south it will be cloudy. Or when the weather is coming from the other direction, the clear and cloudy areas may be reversed. In any event, Whiteface often seems to be the center of a weather conflict.

Because of this, the Tree Farm gets more than its share of precipitation – especially in the winter time. Not that there seems to be less sunshine, but when it snows, it snows. This abundance of precipitation is much appreciated by the trees and also by me since I enjoy winter activities such as cross country skiing, snow shoeing, and just hiking through the snow.

Painting a Picture with my Chainsaw

Views of mountains are beautiful and I was disappointed to learn that my land had none. The mountains were there to be viewed, but the view was blocked by trees.

So I decided to make a mountain view by producing a clearing. The most promising spot was the top of the esker that already provided some small glimpses of the mountains. There I painted a picture with my chainsaw. That was how I felt about the clearing I did to make both Mt. Whiteface and Mt. Wonalancet visible. Many of my walks take me to this beautiful view; especially if I have a friend with me. Things of beauty are nice to observe when alone, but even nicer to share with friends.

On my desk at Bell Labs, I had a picture that was taken from this spot. When I needed to unwind and didn't have time to take a walk, looking at the picture evoked relaxing day dreams.

More Trails

The next trail I constructed branched off Erratic Trail and eventually rejoined that trail closer to the esker. Two thirds of the new trail followed the ruts from past logging operations, but I had to use my imagination to find the way through woods that were very thick. Many, many small balsam firs grew so close together that none did well and removing a number of them opened the trail and improved the forest. For the last third of the trail I was on my own, not guided by the remains of any earlier trail. I felt like a pioneer myself, challenged and excited to be tackling this trail with no historic guidance. Over the years I have modified and occasionally neglected this trail, but it is alive and well at the present. Now called Wildlife Way, it is one of our favorite trails.

In addition to Wildlife Way, in 1976 I worked on another trail, this one near the western boundary. When I bought the property there was a trail/road that began at Marino's (our neighbors to the west) driveway and came onto our property. It provided access to a gravel site on our property that the state had used decades before when Chase Road was upgraded to a paved road. Because so much gravel had been taken from that site, during spring and rainy times the area was flooded with more than a foot of water. Lots of pollywogs thrived there and disputed my claim that it was too wet. They said it was just to their liking.

I realized the trail continued on to Mill Brook and I wanted to discover where it went after the brook. From the gravel site to Mill Brook the terrain sloped gently down, the land becoming wetter as the brook neared. In keeping with the wetter terrain, the trees changed from fir to alder – a shrub-like tree not much good for anything from the viewpoint of an engineer, but enjoyed by birds. Crossing Mill Brook, I found the other bank was a few feet higher and considerably drier. Beyond the brook, thickets frequently obliterated the trail, but I was able to follow its general direction for about a half mile. By my calculations I had to be near the back boundary, but that was far enough for now. I decided to leave the discovery of the boundary for another day.

Later in the fall I rejuvenated Mill Brook Trail from the gravel site to the brook by cutting enough trees and brush to make a trail about six feet wide. Calling it Mill Brook Trail here is premature, but saves the confusion of following many name changes over the years.

Why So Many Trails?

In 1976 I constructed many trails. Now I wonder why I did all that work instead of simply walking in the woods and enjoying them in their original state. But there seems no simple answer. There are many reasons; some utilitarian and some a reflection of my personality.

The amount of work that I did is a result of the fact that I am a workaholic. I get a guilty feeling if I am not doing something productive, trying to satisfy that difficult inner taskmaster of mine. As a young boy, bored in the summer time, shy about making friends, I passed the time by picking leaves off an old apple tree! Instead of playing hide and seek with the other kids, I had to do something that showed tangible results – and bare branches were certainly tangible results. Fortunately the tree survived my version of

productive work, and also fortunately, I have become more creative with my spare time – I now build trails in the woods.

From the standpoint of the long history of these forests, the effect of my trail making may be as ephemeral as the effects of my leaf picking. But from my perspective they had some utilitarian effects. When I first bought the land the woods were so thick that an easy pleasant stroll was impossible. Trails provided easy access to where I wanted to go. As my trail making skills improved I learned how to choose locations that were aesthetically pleasing, so friends could enjoy hiking and skiing on them. And the trails would also enhance the value of the land if I ever decided to sell it.

A graphic illustration of how trails can increase land value is provided by the 60 acre parcel of that Carol and I unsuccessfully tried to buy when we were originally looking for investment property. We fell in love with that land because of the state of the woods. The woods were nicely cared for with trails and there were also some roads on the property that could be driven on. Even though we did not buy that land, I learned from the experience that trails and roads can help a land investment appreciate. That was certainly one of my original motivating factors in trail building.

Finding that there had been trails before I arrived on the scene, and that I could still discern their route gave me additional impetus in trail making. Tracing old logging roads produced a satisfying feeling and often that feeling alone was sufficient for me to rejuvenate one. I can now better appreciate why some people choose to become archeologists. Uncovering traces of ancient civilizations must be thrilling. In my case, the logging roads linked me with the past. Not a very distant past, but one that existed before I did. I now think I would like to become part of this land's ongoing history and perhaps leave some traces that will be detected by later generations. What will these traces be? Maybe those trails, and perhaps more.

After observing the dynamics of the forest over a period of years, I better appreciated how fast the remnants of a trail could be all but obliterated. Yes, ruts left by logging vehicles could last a long time, perhaps even a hundred years, but after a hundred undisturbed years there would be many trees in the path a foot or two in diameter and some close to a hundred feet tall.

The trails I rejuvenated did not date back to the early pioneers. But on the other hand, the creation of logging trails does date back to the colonists when the large white pines were an important source of commerce. Working in the woods still makes me feel close to nature and the people who worked there before.

This Land is Different

As I established numerous trails on the near side (north side) of Mill Brook, I became familiar with the topology. After a few years I finally noticed a surprising and obvious fact. In my little section of the Granite State, there are very few rocks on the surface of the land! Most of the small rocks have been covered over by forest debris and are now hidden by the duff.

But there are some exceptions. There are scattered mounds of rocks, most about three feet high and five feet in diameter. They are relics made by farmers when they cleared their fields in the 1700s or 1800s. They chose to form piles instead of walls because the stones were relatively small, not suitable for stacking. Finding these piles always gave a feeling of wonderment and connection with the past.

But how different this land seemed from the average rock-filled land in the White Mountains! And how fortunate that the paths have not had to detour around rocks. The trail/road construction was much easier because of the lack of rocks, boulders or ledge.

One very notable exception is an erratic, left by a long ago glacier. This boulder, higher than my head and challenging to climb, just sits there by itself! Located near the esker, the erratic may have been hurrying to catch up, but the glacier melted before it could reach the esker. From this wandering rock Erratic Trail received its name.

Mill Brook

Mill Brook enters our land five feet wide and leaves the land with almost twice the breadth. Much of its added water comes from two other small brooks near our eastern boundary. At the stream junction, beavers decided it was a great place for a dam. They built one wide enough and sturdy enough for a person to carefully walk upon. When I first saw it, there were the remains of a beaver house, but it did not seem to be in use. Their dam created a small shallow half acre pond.

Since that was our largest body of water, I decided to do some clearing so we could use a rubber raft there. Many alders grew in the pond, a great food supply for the beavers. That winter when the pond was frozen over, I walked out on the ice and cut down many of the alders using a bow saw. One day the winter sun was warm, I lay down on a pile of brush I had just cut and fell pleasantly asleep. But the following spring, rushing water broke a hole in the dam and the beaver pond ceased to exist. I never got to use a rubber raft in that spot.

But that was just the beginning of my playing in Mill Brook. The next summer I spent hot days damming it to make a swimming hole. I piled basketball sized rocks across a narrow passage between boulders. After piling the rocks, I packed the cracks with gravel and sand to further slow the water's flow. The pool filled to about four feet deep and eight feet long – not much of a swimming hole, but still impressive to its creator! After a hard day's work it was a peaceful, secluded place to relax or enjoy a refreshing dip. Little fish that gently nibbled at my toes seemed to enjoy the pool too.

Because the little boy in me still enjoyed playing in streams and trying to influence their will, I took on another project at Mill Brook. Upstream from the old beaver dam, where the brook took a sharp turn there was another small, but attractive pool. The force of the brook's current was trying to cut directly through the banking instead of turning the corner, which would drain the small pool. Though I worked hard to preserve the pool by reinforcing the banking, my efforts were feeble compared to the springtime rushing water. I lost the battle and the pool. But I learned not to try to influence the course of a stream, and now contentedly watch streams as they meander in search for their optimum course.

The Back 40

The terrain on the far side of Mill Brook is considerably different from that on the north. Most of the land on the far side slopes upward from the brook, with no swampy areas, contrasting markedly to the near side which had about fifteen acres of swamp.

But there are still some wet areas on the far side of the brook, probably caused by a layer of hardpan not far beneath the surface that slows the absorption of surface water. The higher water table influences the type of trees found on the far side of the brook, with white and red pines scarcer than in other areas. Hardwood trees predominate there while on the near side of the brook there is a more even mix of hard and soft woods. In the wintertime the back forty is noticeably sunnier because the predominating hardwoods lose

their leaves. Also, the higher water table causes the trees to have shallower root systems, which makes the trees susceptible to blowdown.

The distribution and characteristics of the rocks on the north and south sides is also different. North of the brook, few rocks lie on the forest floor; while in the back forty there is a plethora. I concluded that the last glacier, about 15,000 years ago, deposited lots of gravel on the near side of the brook while scraping material away on the far side. That was going to make it much more difficult to create roads on the back forty, with large rocks and little available gravel.

OUR COMMUNITIES

The first chapter described how our property in the White Mountains was purchased, and some of the early trails on the land. This chapter digresses from the Tree Farm story, so the reader can better understand the local communities, briefly describing the towns of Sandwich and Tamworth, plus the community of Wonalancet. The town of Sandwich is important to this book because that is where the tree farm is located. The town of Tamworth is important because the eastern boundary of the tree farm is the Tamworth / Sandwich town line. And the community of Wonalancet, which is oblivious to town borders, has greatly affected my life. Let's visit Wonalancet first.

Wonalancet

Wonalancet is a small community whose history goes back to the 1700s. It was settled about the time of the Revolutionary War. Timbering was important at first, and numerous mills were established in the area. After the best and easiest of the timber was exhausted, the population decreased.

But because of its picturesque setting, Wonalancet is now slowly growing again. In fact, the growth would be strong except there is usually no land for sale – some is in the White Mountain National Forest, much is protected by conservation easements, and the lucky ones here just don't want to sell.

Wonalancet has no clearly defined boundaries, because it is not an incorporated town. It is instead a community of people who are proud to consider themselves part of Wonalancet. Sandy and I include ourselves in that community. The community is united by the heritage of the early settlers who founded the community, our love of the mountains in this area, the Wonalancet Out Door Club which maintains hiking trails in this part of the White Mountains of New Hampshire, and the Wonalancet Preservation Association which helps maintain the rural setting.

The most notable landmark is the picturesque Wonalancet Chapel. Because this part of Wonalancet is in Tamworth, the casual visitor might classify Wonalancet as a Tamworth community. But if you leave the Wonalancet Chapel and travel along Ferncroft Road to the base of the mountains, in a distance of a half mile you visit Tamworth, Albany, Sandwich, and Waterville!

Another landmark in Wonalancet is Chinook Kennels, started by Walden Arthur who introduced sled dogs to the area. His most famous dog was Chinook. Walden was in charge of all dogs and dog training for Byrd's first expedition to the Antarctic. Without Walden's and Chinook's contributions in the Antarctic, Byrd's expedition might have failed. Walden was so proud of Chinock who was lost during that expedition, that when people suggested the road from Tamworth to Wonalancet be named Walden Highway, he objected and had it named the Chinook Trail.

In Wonalancet, Arthur's wife Kate Sleeper Walden is even more famous than he. She had the foresight and organizational skills to encourage hiking trails to become established so that summer guests could be attracted to the area. Kate Sleeper Trail and Mt. Katherine are named in her honor.

For a great history of Wonalancet, see The Tamworth Narrative, by Marjory Harkness.

Tamworth

Not all I appreciate about Tamworth is confined to Wonalancet. At the risk of overusing the word, the center of Tamworth is quaint. One of its draws to us and to numerous tourists is the Barnstormers Theatre, one of the oldest summer theatres in New England. It consistently has excellent summer performances and, thanks to the Tamworth Arts Council, concerts and plays are now presented throughout the year.

The Great Hill Fire Tower is no longer used to spot forest fires, but is climbed by many for its wonderful views. For the small investment of a twenty minute walk, one can get a 360 degree view of the area. John Mersfelder has placed a series of annotated photos there to aid the identification of mountains. The only problem with the fire towers location is that the hike to the tower is too short. Such a spectacular view should require more effort.

Great views can also be obtained from peak of Mt. Chocorua. Its bare rocky peak is the goal of many hikers, both young and old. It is a relatively easy day climb, requiring no special climbing gear and the 360 degree view one has from the summit is unsurpassed in the area. Adding to the beauty of Mt. Chocorua is Lake Chocorua. This is located south of the mountain and affords one of the most photographed and painted views in the state!

Route 16, the major North/South New Hampshire road on the east side of the state, brings you to The View: a rocky New England pasture, stonewalls sloping down to the lake, white birch contrasting with the green pasture, a foot bridge going over a narrow part of Lake Chocorua, and then the lake, mirror smooth, reflecting the mountain that dominates the hills behind.

This area is part of the hamlet that is called Chocorua, one of the five small communities that make up Tamworth. The beauty of Chocorua attracts many tourists, some settling in the hamlet, either as summer residents or year round citizens. Fortunately, the goal of both old and new residents has been to preserve the beauty of the area. As a lover of tranquility, I especially appreciate the town ban on powerboats on Chocorua Lake. Though I don't drive past the Chocorua view on the way to the Tree Farm, I have it in my house whenever I want to look at it. In 1980 my mother created a painting of it that is very special to me.

Sandwich

Even though I was not born here, Sandwich has become my hometown, the place I am most attached to. Having property in Sandwich for more than half my life has made this so, but the reason I have owned property for so long is because Sandwich is so special.

The year round population of Sandwich is small, considerably less than 2000, spread out over a large area with Sandwich geographically the third largest town/city in the state of New Hampshire. There are many places here where one can feel close to nature and experience solitude. Due to progressive zoning laws, conservation easements, land in current use, and much land in the White Mountain National Forest, Sandwich (like Wonalanet) will retain its rural character.

Because of Sandwich's lovely setting, the summer population triples in size. But the traffic is still sparse as evidenced by the fact that there are no stoplights or gas stations in town! Squam Lake is a large part of the reason for Sandwich's summertime popularity. A beautiful lake, with little development visible from the water, Squam Lake was the

setting for the movie "On Golden Pond." Summer visitors also come here for the mountains, whether just to be viewed or to be climbed.

While not snobby, the residents are definitely not country bumpkins either. And we have our share of do-gooders, in the best sense of the word. Many people have given back to the town by establishing trust funds that benefit the town.

Perhaps the town is most known for the annual Sandwich Fair. This three day autumn fair often draws more than ten thousand people per day. They come for the livestock, crafts, entertainment, amusement rides, parade, and perhaps most of all the picturesque country setting. And then they go home, which is the best thing about the fair!

Sandwich has four swimming areas: a town beach on Squam Lake, another beach on Bearcamp Pond, the Pot Hole, and a shallow swimming area beneath Beede Falls. The Squam Lake beach and the Pot Hole are easily found by the general public, since major roads pass by them. To protect these areas from being over used, a town sticker is required for parking.

The Pot Hole is along Route 113 A, and is named for a narrow but relatively deep hole that was created by swirling water. People swim and jump off the rocks all along this swirling river area. Beede Falls is so pristine I feel compelled not to share its location with you! But if you care enough, you can find it.

Sandwich Notch Road and its environs are so special that a book was written about it, The Road Through Sandwich Notch, by Elizabeth Yates. This book stirred nation-wide interest, resulting in the area being protected for its historical significance and the wonderful environment. No one lives on the Notch Road now, but cellar holes attest to the fact that it was the place to be when Sandwich was first settled.

To learn about Sandwich's history, the experts are at the Sandwich Historical Society. Not only does their museum have many interesting artifacts, the society also has been extremely proactive in documenting the town's history.

Since 1920, the Sandwich Historical Society has had an annual excursion to some part of the town. In preparation for the excursion, extensive research is performed to learn more about the area's history. On the day of the excursion, the research is shared with the attendees and houses, cellar holes, or other points of interest are visited. The results of that research is published by the Historical Society in their Annual Excursions booklets. These publications, uninterrupted since 1920, are an amazing resource for Sandwich history.

The Twelfth Annual Excursion describes the two cellar holes that are on this property, plus many others in the North Sandwich section of town. The map that follows was copied from that excursion. Site 14 and 17 are on the property that I purchased in 1975. Quoting from the Excursion:

(14) Noah Bickford Place

This was the home of Noah Bickford, who built and married Ursula Bryer. Here they lived until the death of Mr. Bickford. The widow continued to occupy the place until the house was burned about twelve or thirteen years ago (about 1920). It is now a part of Mrs. Sturtevant's holdings.

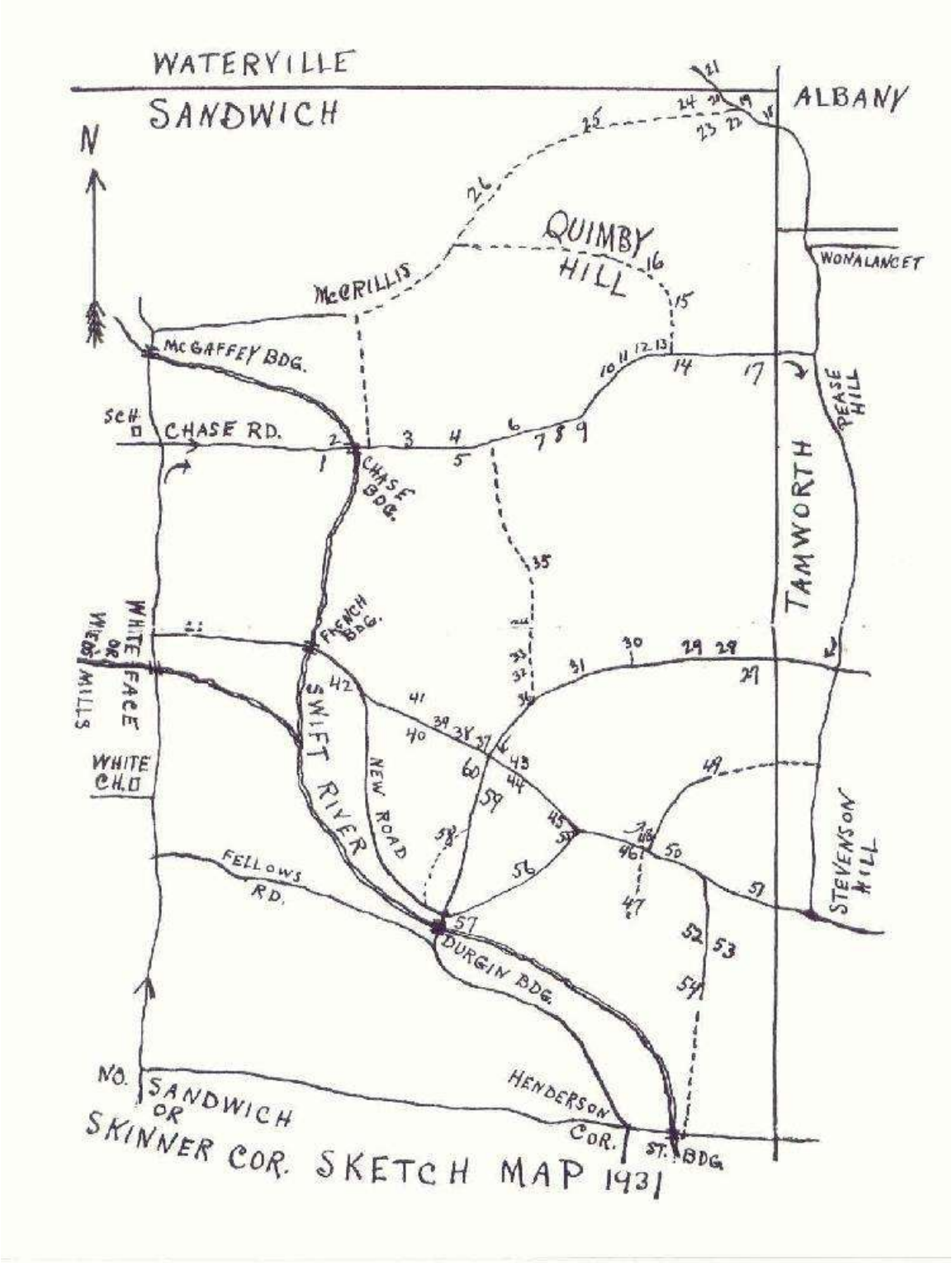
(17) Nora Gale Lot

This is a lot of land variously described as being from 15 to 20 acres and a part of Lot 1, Range 11. For many years there has been no information about who used to live here, but a deed found lately shows that the land was owned by Jonathan Warner, Esq., in 1813, and that the house on the land was small – much like a camp –

16 feet long and 14 feet wide, and owned by Nathanield Severance, who sold it for $20.00 to Mark Jewell of Sandwich, Sept 3, 1813. Whether any other building has been there since then we do not know. We have found that the land was later owned by John Smith, Jr., who conveyed it in 1825 to Caleb Brown. Brown conveyed to Asa Prescott in 1845, and he sold to Joseph A. Wiggin. Later it came into possession of Hiram and Benjamin Currier, who sold to Nora Gale about 1899. The old road which went in to the little house continued toward the East and was frequently used in winter by teamsters to avoid the steep "Pease Hill" in Tamworth. The large field stone on the right hand side of the road and on the edge of the bank is the marker for the line between Tamworth and Sandwich.

Finding this history of our land was very exciting, increasing the connectedness we feel for this land.

1931 N. Sandwich Map
from Sandwich Historical Society's 12th Annual Excursion



A TREE FARMER'S EDUCATION

Peter Pohl Tours the Land

By the time I had owned the land for two years, I had established three trails: Erratic Trail from Chase Road to the esker, Mill Brook Trail from Marino's driveway to Mill Brook, and Glacier Trail from Mill Brook Trail halfway to the eastern boundary. Establishing the trails helped me to appreciate major characteristics of the property. The western land was a mixture of wet and dry areas. The land to the east was dry with few rocks, and on the average gently sloped towards Mill Brook to the south. The esker with its steep sides was a dramatic exception to the gentle slopes. Proceeding from east to west, there was a large treed swamp of perhaps 10 acres in size, not wet enough to have standing water, but wet enough to influence the vegetation and make it difficult to establish a dry east-west route.

While I had become somewhat familiar with the lay of the land, I had no idea if there were trees of commercial value, and if so what area presented the best timbering opportunity. I thus decided it was finally time invite Peter Pohl, the County Forester, for a visit. On our walk he determined that the majority of the land lacked sufficient timber of commercial value to attract a logger. However, the back 40 acres on the far side of Mill Brook contained valuable mature trees that were ready for harvest. He suggested that perhaps the value of the timber harvest would induce a logger to upgrade Mill Brook Trail for use as a logging road. That would enhance my property value, and I decided to explore the possibility of a timber harvest if I could find a logger willing to make the road.

Financial Gain or Emotional Gain

The land was first purchased as a long term investment that would be sold some day for a considerable profit. The fringe benefits of walking on and enjoying the land were not the major reasons for buying it. The lure of financial gain was of paramount importance when Carol and I bought the land. But by 1977 my feelings towards the land had changed. Divorced and separated from my children, I needed something to fill the void. So I spent as much time as I could in Sandwich. And as I worked in the woods, I changed myself more than I changed the woods!

I didn't worry about encountering a bear, I hoped I'd be lucky enough to meet one in my travels on the property. I didn't think *will this new trail enhance the value of the land*, but *will it enhance my enjoyment of the land.* And the longer I owned the land, the less I was willing to part with it. But still old value-systems die hard. A secondary concern of trail building was still the enhancement of land value. Fortunately, if done properly, enhancing land value financially also enhances it aesthetically, so it was a win-win situation.

The Raped Land

As time progressed, I saw the woods through more knowledgeable eyes. At first I suffered from a *couldn't see the forest for the trees* syndrome. I knew there were lots of trees, but did not know their species or specific qualities. By the fall of 1977 I had spent considerable time in the woods putting in trails and just exploring. Through this experience, and thanks in large part to the help of Peter Pohl and Stan Coville, I learned to

see the trees more clearly. Instead of *they all look the same*, I became more sensitive to their differences. Not just the differences between species, but also the differences within a species.

Trail work made me very familiar with the balsam fir. The old logging roads that once let in the sun were ideal nurseries for the balsams. To open those trails again, I must have cut down thousands. Walking through the woods one day with Bill Read, a man who knew his trees, I had a debate whether a particular tree was a balsam fir or a spruce. I had learned that balsams had distinctive pitch blisters on their trunks, and sparser needles. He was sure the tree was a balsam fir, and I was equally sure it was a spruce since it looked much too good for a balsam. I was too stubborn to be truly convinced by Bill, who had been in woods much more than I, but diplomatic enough to appear convinced. Some years later I realized Bill was indeed right. Some strains of balsam fir look remarkably like blue spruce and even yield good saw logs.Whenever in doubt now I've learned to check the cones. If they grow upward they are fir, if down then spruce. From a person who grew up valuing book learning, I have come to value my experiential woods learning as well.

When I walked the woods with professional foresters like Peter or Stan they often pointed out good quality trees versus poorer ones. The straightness of a tree, the quality of the bark, the amount of light reaching its crown – all these I learned to appreciate. I also learned to judge the quality of trees by the number of dens they provided for animals.

I came to understand that my woods had been raped about 40 years before my purchase. Most of the good quality trees had been taken and then the land was left to fend for itself. But both fortunately and unfortunately my forest was very prolific. When trees were cut, more light filtered down and numerous seedlings sprouted and vied for the vacated real estate. That was sometimes fortunate because then I didn't have to plant replacements.

But often, profuse sprouting of seedlings produced unfortunate results. Trees suffer when they are too crowded and so does animal life. When trees are so thick that little light reaches the forest floor, plant life is sparse. In many areas of the forest it seemed nonexistent. With little to browse on, the animal population had decided that the forest floor was indeed greener in someone else's woods. The bird population was also sparse because flying in such thick woods is very difficult. My mother was the one who first noticed that she seldom heard birds singing in our woods. At first defensive, I came to accept it as the sad truth. Her observation was one more motivation to thin the woods for wildlife habitat improvement.

Mast Trees

Even though many of the good quality trees were removed when the land was logged, there remained occasional white pines three feet in diameter. Maybe those were spared in the last harvest to provide cones to seed the forest's rejuvenation. I had no idea how old these trees were, but they certainly seemed vigorous and in the prime of their life. Later I learned that many were about 75 years old, and discovered why they were of that age. Stay tuned.

The large pines reminded me of those singular giants, marked as belonging to the king in the days before the American Revolution. At the time of the revolution there were not enough settlers in the Sandwich area to facilitate hauling white pines the hundred plus miles to the ocean. But in less than 75 years after the revolution, no virgin white pine stands remained, and many of the large trees had indeed make it to the ocean. Large yokes

of oxen, often greater than 20, would drag the trees to Lake Winnipesauke and from there along a water route to Portsmouth, New Hampshire.

Why were those trees worth such great effort? Given time, a white pine could grow to be greater than 150 feet tall, the wood strong and light; essential characteristics for the tall masts of sailing ships. To appreciate the strength of a white pine mast, consider that a tree which grew to be 150 feet tall must have weathered many hurricanes. And unlike deciduous trees that lose their leaves before hurricane season, white pines still had millions of needles attached, catching the force of winds that tried to push over or break the tree. A tree that could withstand hurricane winds on land was a good candidate for a mast that would last through ocean gales.

A few white pines more than three feet in diameter are still scattered around our Tree Farm. At 100 feet tall, they are far short of the height they could attain. If I again have logging done on this land, I'll spare as many of these young giants as practical so that some day, long after I am gone, they may reach the heights of their gigantic ancestors. In the meantime, I draw inspiration just standing next to my growing giants. They exude a sense of peace and strength.

Actually, as it is now thirty years since I purchased the land, there are more than a few white pines that exceed three feet in diameter. Many prior members of the two foot club have added a foot to their diameter, plus thirty feet to their height. The more time goes by the more impressive these woods become. Wish I could say the same for myself.

Boundaries

The saying *good fences make good neighbors* probably was originated by a farmer. Having livestock trampling and eating a neighbor's crops could certainly harm a friendship. Fences are unnecessary on most non-livestock properties, fortunately for me because of the prohibitive cost of more than a mile of fence needed to circle my property! But while I don't need a fence around my land, I do need readily identified boundaries. I don't want to upset neighbors by accidentally taking wood from their land, whether it be a small amount of firewood or a large amount while timbering. And I don't want them accidentally appropriating any of my trees.

In New England woods, there are seldom easily identified boundaries. In fact, deeds often describe boundary lines by referring to trees that have long since disappeared. I feel very fortunate that this land is the exception to the rule – the boundaries are clearly and accurately described in the deed.

The northern boundary of the property is Chase Road, and part of the eastern boundary is the center of the Read's driveway. That driveway follows an old woods road that continues past Bill Read's house to the Sandwich-Tamworth line. The woods road doesn't stop at the town line, but our property does. At the town line, the boundary turns south following the town line. All other boundaries are either perpendicular or parallel to the town line, either North-South or East-West; or to be more precise, six degrees thirty seconds away from those directions due to the drift of the magnetic north pole over a period of time.

Along the town line, the boundary was well marked with some relatively fresh blazes, probably made by Stan Coville, or a helper, to prepare the land for sale. More interesting were older boundary artifacts. Barbed wire, nailed to the trees long ago, now passes right through the boundary trees' centers, as over many years the trees grew around the wire. The barbed wire told me more about the earlier farmers – they must have

had livestock. Why else would they go to the trouble of stringing barbed wire? Small piles of rocks scattered throughout the dry land between Chase Road and Mill Brook also suggest livestock and previously cleared land on this part of the property

The southern boundary was easy to trace, fairly well blazed with more barbed wire growing through the center of trees. I cut some unblazed trees so it would be easier to sight along it in the future.

The western boundary left much to be desired –only two stakes 3000 feet or a kilometer apart! Tracing that boundary was left for another time when I would be properly motivated because it was not going to be an easy task.

Reading this years later, I am struck by the fact I never even considered hiring a surveyor, especially for the challenging western boundary. Not only was I frugal, I also liked challenges – and I still do.

Dave Weathers

Dave Weathers, of the Soil and Conservation Service, is impressive when you first meet him and every time after. Both his physical and mental characteristics are memorable. About 6' 3"and built like a body builder, he resembles Robert Redford. Or maybe it's the rugged outdoor Marlboro man he takes after. Yes, he did smoke, but hopefully has quit by now.

When he presents his views about improving a woodlot, he conveys the impression that he knows what he's talking about, which is certainly true. Ideas from Dave have improved our Tree Farm in the areas of wildlife habitat, pond construction, road construction and maintenance, and water quality - many of the areas of service offered by the Soil and Conservation Service.

I have toured our Tree Farm with Dave many times. No matter the purpose of the visit, he keeps on the lookout for signs of wildlife. Once, observing some marks in the road, he made an observation I've treasured ever since. He commented, "Looks like someone scuffed out deer tracks here to eliminate their sign." I later learned he was right! My neighbor, Len, had noticed the tracks left by a big buck he hoped to shoot during hunting season. And, not wanting competitors to see the large tracks, he had attempted to hide them.

There's Gravel in Them Thar Hills

Dave was complimentary about my system of trails and small access roads throughout the property. He mentioned that I had *the unique situation of having a more than adequate supply of gravel located on the property* which could be used to fill low wet spots scattered throughout the road system.

I knew that gravel had been removed from the land in the past, but I hadn't considered the possibility that more might remain. Dave could see that, but it would take years before I was able to see what he could see. Eventually I came to realize how unique my supply of gravel was and what a profound effect it would have on the evolution of the Tree Farm.

Forest Land Improvement

The prior timber harvests on the property had concentrated on making a profit and not on improving the woods. The resulting thick forest didn't live up to its potential, for recreation or wildlife. Dave Weathers, Stan Coville, and especially Peter Pohl had convinced me that selective timbering was the only viable solution, removing poorer trees

to provide a better environment for the forest and the wildlife. I wrote the following letter in 1979 as part of my continuing quest to have the land selectively timbered.
Scott Aspinall of Forest Land Improvement

I own 160 acres in Sandwich, NH. It is all wooded and I am interested in managing it properly. Peter Pohl, who gave me your name, has walked the land with me and said there is an area in the back which is ready for timbering. There are also some decent sized trees scattered throughout the rest of the land, but that would be very selective timbering.

Would you like to walk the land with me sometime and see if you think it is worth timbering?

I have had the land for more than 3 years, and have learned to like the area so much I have built a "vacation" house on the land. I mention this to emphasize that I plan on keeping the property for many years. Any forestry work that is done will not be done primarily to obtain current income, but to improve the woods. In particular, I would be willing to trade trees for good logging roads (including filling some low spots with gravel).

Scott, along with his partners Donald Johnson and Howard Trask, toured the land. I walked with Scott, while Donald and Howard went their separate ways. We covered different parts of the property on the near side of Mill Brook. When we met the others, Scott asked for their impression. Donald (or was it Howard?) tersely replied "precommercial." With this one word he conveyed the same message that Scott had been relating to me. It would be very difficult to interest anyone in logging this part of the land now – it needed to wait until the forest matured more.

They felt the land on the far side of Mill Brook had mature hardwood worth harvesting, as Peter Pohl had said. But they thought the low volume would make it difficult to arrange a timber sale. They never contacted me with a proposal and the idea was tabled.

The Blowdown

Two years later, in November of 1981, a storm with seventy mph winds blew through this area causing considerable damage to the woods. Winds in late fall can be very harmful. Deciduous trees have lost their leaves, exposing the evergreens to greater wind forces than usual. And the ground wasn't frozen, reducing the holding power of the roots in the rain-soaked soil. Many of our conifers were blown down. It hurt to see the damage.

I asked Peter Pohl what could be done to salvage the many fir, spruce, and pine knocked down by the storm. He told me that blowdown damage from the windstorm was extensive with two large scale salvage operations underway almost in our backyard. On the Wakefield property across the road from us, approximately 200,000 board feet were being salvaged, and on the Tozzer property surrounding Great Hill Pond, almost 500,000 board feet.

Peter said there was an insufficient volume of blowdowns on our land to interest a logger. To obtain a contract, the logger would have to be allowed to harvest other timber as well as the blowdowns. He strongly recommended against doing that and I heeded his advice.

At that time, I also asked Peter what would be entailed in our property becoming a registered Tree Farm. He sent me information about the selection criteria including a Tree Farm Rating Sheet to determine the eligibility of the land for certification. Peter suggested

that once I felt sufficient work had been accomplished in our woods, I could let him know and an inspecting forester would examine the work.

Brian Cutter

The next attempt at timbering our woods was initiated by Brian Cutter of Eastern Forest Management in 1981. They offered a wide variety of forest management services ranging from advice in purchasing woodland properties to management of forest resources and production of wood products. In particular, he wrote

Wildlife, recreation, and aesthetic values go hand-in-hand with good forest management, and we take these into account when formulating a management plan for a particular piece of property.

That sounded good to me, so I replied that I was particularly interested in improving the forest, helping it to develop more high quality timber. We walked the land and I had an enjoyable time, but Brian's opinion of what should be culled and mine differed. I wanted to save the red maple for future growth while he thought it should be harvested. Because a timbering job can change the character of land for decades, I asked Peter Pohl for his input. He gave a concise ranking of the value of the predominate trees in our forest.

Balsam fir is not a favored species because it is short-lived and in unmanaged stands tends to deteriorate when the trees reach 6-1"' in diameter. To manage balsam fir you have to begin releasing the trees when they are 6-10 feet tall. Allowing plenty of growing space at this height would prevent stagnation and will allow the trees to reach a reasonable saw log diameter, 12 plus inches. It does little good to begin thinning balsam fir when it reaches 40 years of age. At that point it is too late. I would only manage for balsam fir if that is the only alternative and there aren't more valuable species present.

Red maple is less desirable than sugar maple. If the red maple is good quality and more valuable species are not present then I suggest releasing the high quality red maple. The red maple should be smooth straight stems without branch scars and protruding limbs for about 16 feet.

The quality of the tree should be the deciding factor as to whether or not it gets removed. If there are a variety of different valued tree species then the higher valued ones should be retained. High value hardwood species include white and yellow birch, red oak, white ash, and sugar maple. Medium valued species include beech and red maple. Low valued trees include poplar.

With Peter's insight, I felt more confident when I accompanied Brian as he marked trees for a possible timber sale. The marked area was close to the Read's driveway boundary and had proportionately more hardwoods than any other area of our land north of Mill Brook. The main species of commercial value was red maple, but if a tree was immature and a good specimen, I did not allow it to be marked. Approximately ten acres were marked, but it was questionable whether I had allowed Brian to select enough good wood to attract a logger.

With the passage of time it turned out Brian was right – more trees should have been selected to attract a logger. But since the improvement of the forest was my primary motivation for having a timber sale, I feel I was right too in being protective of these woods. Even though we were not able to establish a business relationship, Brian was thoughtful and sent information about planting seedlings to upgrade the quality of our woods.

The NH State Nursery has seven species of seedlings two to three years old. They are White Spruce, Balsam Fir, Red Pine, Norway Spruce, Scotch Pine and Fraser Fir. Price per 100 of any species is $10; for 500, $40 and for 1,000 $75.

Usually 1,000 seedlings are planted per acre. It may be better however, to plant 500 per acre to test survival rates. Later, more could be planted between the established seedlings. My recommendation would be to plant White Pine mixed with another species such as Red Pine. If the White Pine grows well, more could be planted.

The higher ground away from the brook appears to be well-drained gravel soil, and would make the best site. To insure all seedlings bought are planted, it may be best to plant five acres this year and five acres next year. The Balsam Fir and any undesired hardwood will have to be thinned either before or during planting.

In addition, there is a federal Cost-Share Program for establishment of plantations of White and/or Red Pine. The program pays up to $50 per 1,000 trees planted. The county forester is not sure how much money will be available this year. If the planting is approved by him then you would be eligible for any available cost-share payments. Personally, with the effects of the budget cuts unknown, I would not plan on too much money from the government programs.

Orders for seedlings have to be returned by March 1. The sooner you could confirm your plans and decide what species and number of seedlings you want, the more likely it will be to get your order filled. If you could call some evening or make a trip to Sandwich, that would be good.

I sent Brian a check of $155 for 1500 white pines and 500 red pines. But the State of N. H. was late that year in making the seedlings available and when the weather turned too warm and dry for planting, I canceled the order. But, thanks to Brian, I did get the urge to plant seedlings. So I saw the cancellation as only a postponement and planned to plant in a future year when the conditions were better.

Bill Read

Bill Read, a previously mentioned neighbor, helped teach me how heavy equipment can be used to shape the terrain. Over the years he put in my cellar holes, driveways and septic systems, and helped me with roadwork. Watching Bill, and his indispensable helper Dennis, schooled me in moving earth, and specifically gravel, to enhance the appearance and value of the land. During that tutelage, I developed a bad case of heavy equipment envy, and eventually satisfied that craving by purchasing a piece or two.

Reads have been in the area for generations. After high school, Bill attended Harvard, but unlike some who are exposed to the big city, he realized where his roots were and returned to live in the Sandwich area. His father had a ten acre parcel in Sandwich, abutting the Tamworth line. Bill got half of that land so that he could live here. When I first met Bill, he was spending the summer on that land, which abuts our land, dwelling in a tent. For modern conveniences he had an outdoor claw footed bathtub and a gas refrigerator. The tub was down by Read Brook* so it was easy to fill. Though it is no longer used, the bath tub remains in the woods, overturned so it won't collect leaves.

Bill's first permanent dwelling was a shed he moved onto the property. This big step up from a tent enabled him to live on the property year round; no more wintering

* Since I was the one who named the brook, Bill didn't know it was named for his family until he read it my notes

with his grandparents. Instead of an indoor toilet, he had an outhouse which was a marvel to behold. Facing south with plastic sheeting as a windbreak, it was a great place to contemplate nature on a warm sunny winter day.

Bill married Pat the same year that Julie and I were married. Their daughter Alison is a year older than Heather and a very good friend, and their son Kelsie is a few years younger. But as the family grew, so did the dwelling, additions added until it now resembles a conventional house. Unfortunately the solar heated outhouse is no longer around.

At first Bill's business was landscaping. In fact, my initial request for Bill was clearing trees for my first house on the property (referred to as Clarinda's house). When the house shell was completed, Bill did the landscaping. Being well pleased with his work, I have had Bill back many times.

In 1982 Bill prepared the site for a pond behind my second house, digging the drainage ditch around the site to dry up the area for the large machines that were to follow. That ditch digging gave Bill a good opportunity to exhibit his skills with a backhoe. When Dave Weathers saw Bill using his backhoe to dig test holes for the pond, he said that the old girl looked tired and past its prime. But Bill knew how to work efficiently within its limitations. He has a feel for his machinery and they work together as partners.

Three things were striking as I watched Bill work. He knew what he was doing, planned his future moves and adjusted his strategy to best accomplish the task, and was obviously happy. The smile on his face showed how much he enjoyed using his machinery.

Bill always listened to me and valued my contributions. Even though he was the expert, he was willing to hear my suggestions, modifying his approach to the task when I had a worthwhile idea. Since Bill is a perfectionist and I am an optimizer, my suggestions often dealt with trading perfection for saving time and money. That often necessitated my doing some grunt work while Bill was home for lunch or finished for the day. In reasonable doses, the physical work was a pleasant break from my cerebral scientific profession.

Bill seems to have no desire to substantially enlarge his business and become very well off in the process. His well-earned reputation and his intelligence, planning skills and work ethic would allow him to grow it. But I think he doubts that it would make him any happier than he is now. He doesn't want to make money for money's sake. Perhaps many of the "successful" business men could take a lesson from Bill.

Looking into Nature's Crystal Ball

Becoming a tree farmer has helped me develop the ability to look into nature's crystal ball. As an example, I could see that a treed swamp could become a beautiful pond, which encouraged me to start such a demanding project.

At an early age my mother had told me I couldn't visualize things as well as my brother, but I had other strengths so it was no big deal. It was one of the few negative assessments she gave me and luckily it had short lived effects.

But when I bought the Tree Farm, my crystal ball was opaque. I couldn't look at terrain and see where a trail would look good or visualize how thinning certain trees would help others to thrive. But almost as if by osmosis, these skills developed with time. I worked in the woods, made mistakes and learned from those mistakes. And I learned by

reading and listening to the foresters I encountered. I'm thankful for the federal and state programs that teach people such forestry skills.

Developing my visualization skills was beneficial in planning forest improvement, but it had other uses. I helped one friend decide to buy a house site. When her instinct told her the land near the street sloped too much, mine said what a good situation for a walkout cellar. And I went traipsing through a few wood lots with another friend looking for one that was suitable, finding one so nice and so reasonably priced that I would have bought it if he hadn't. I could easily see its potential.

And when I first saw our house lot in Kingston, New Hampshire in 1980, a low area had lots of unsightly rubble left there from bulldozing the road. That may have turned off prospective buyers, because when we came along half of the lots were sold, but the ugly duckling was still available. “Seeing” what was beneath the rubble, we decided to buy it.

Continuing Education with Peter Pohl

In August of 1986, Peter Pohl from the Cooperative Extension Service came over again so that he could be updated about what we were doing. I asked Peter whether or not we could thin the thickets of balsam fir seedlings and end up with a Christmas tree plantation. He was surprised to see how thick they were and told me that the seedlings could be sold for about ten cents apiece, but that seemed a lot of work for a little income.

After looking over the balsam fir seedlings, we went for a leisurely walk so Peter could see my changes. Peter was as impressed with the amount of gravel on the land as Dave Weathers had been. He suggested trading some of the gravel for roadwork. That sounded intriguing, so I decided to so some investigative work. That road improvement project came to fruition years later.

DICK and JULIE

Not long before Julie came into my life, I decided to have a house constructed on the Sandwich land. Since we had many happy times together in that house, it belongs in this *Dick and Julie* chapter.

Clarinda's Cape

My first dwelling in Sandwich was an eighteen foot travel trailer. It was acceptable for a few years, but better for being a hermit than for entertaining friends. And because I lived in an apartment in Massachusetts during the workweek, I wanted a place to call my own.

I decided to build a house that would suit my future life as I envisioned it, yet have good resale value if I chose to sell it. With this in mind, the house was constructed in the northeastern corner of the land. Locating the house near a corner of the land made it easier to subdivide the land if necessary in the future.

At that point in time, the town of Sandwich did not even require a building permit, just a letter of intent to build! Since then Sandwich, like most other places, has enacted zoning requirements, with of course a resulting increase in bureaucracy. While ordinances can be annoying at times, I for one am happy we have them. I can understand the desire of some to have as much freedom as possible, but even in the "live free or die" state, junkyards make poor neighbors.

Because there were no trails in the vicinity of the house site, I decided to remedy the situation. During March of 1978, I planned a trail and did a little brush removal, but not much because three feet of snow still covered the ground. In April and May, while the house was being built, I finished the trail connecting the back yard to Erratic Trail.

Bill Read cleared the house site under a barter arrangement – he got the wood and I got the clearing. I also reduced my costs by using gravel from the property for driveway construction and the septic system. The gravel came from a site where Bill Read had previously gotten gravel for his driveway. After the construction of my house, the gravel site actually looked better, just a flat clearing remained. That area eventually became the Rock Playground.

For many reasons I chose a traditional Cape Cod design: it had the colonial look of many Sandwich houses, was efficient to heat, and gave more value for the dollar. My standard house design by Prescott Homes was called the Matthew Adams. Twenty four feet wide and thirty feet long, the first floor had a kitchen, great room (dining room/living room), bedroom and full bath. The second floor was unfinished but had space for two bedrooms and a bath.

To maximize solar gain, I oriented the rear of the house due south by using a compass. Fortunately the rear of the house had two large sugar maples whose shade kept the house cool in the summer, but let sunshine come in the southerly windows when their leaves fell early in the fall. On a clear winter day, sunshine provided lots of heat in the mid-day. In the evening, heat was provided by a Fisher Mama Bear wood stove close to the center of the house. By having the stove in the center of the house heat distribution was enhanced while creosote build up was reduced. Because creosote condenses more readily

at cold temperatures, a chimney on an exterior wall can have more build up causing greater possibility of chimney fires.

Prescott Homes constructed the shell of my house in the spring. From the outside the house looked complete, but unpainted. The inside was certainly not finished. With two-by-fours for walls, no wallboard, no electricity, and no plumbing, I had just what I had contracted for – basically a roof over my head. It was my job to take over and paint the outside, wire, plumb, and insulate. Then the builders would come back to finish the inside walls. Because the second floor was not going to be finished for some time, I insulated between the two floors, to keep the first floor as warm as possible. In doing this I accidentally learned that insulating to reduce heat loss also reduced sound transmission. Although no one was upstairs making noise at that time in my life, I came to like that feature and have made it a part of each of my future house designs.

Because I intended to use the house only on weekends, and don't believe in wasting heat, I wanted to be able to leave it unheated during winter weekdays. To avoid pipes freezing and bursting on frigid days, I designed the plumbing system to make it very easy to drain. A faucet at the lowest point in the system could be connected to a hose that went out the cellar door. So at the end of a weekend, I could shut off the water pump, attach the hose, open the faucet, and drain the entire water system in 5 minutes! Not bad for someone who had never done any plumbing before, but thank goodness for plastic pipes which don't require soldering! And contrary to warnings from some friends, the walls did not crack and bother the paint. Perhaps having a well drained foundation helped.

Another neat feature about the house was its water supply. In all but the driest part of the summer, I could open a faucet in the cellar and get water without using the water pump. The water table was considerably higher than the cellar floor, but that never caused problems because there was a drainpipe around three sides of the house and the foundation was so tight that water never leaked into the cellar. But if it did, opening the cellar door would let the water drain out, so not much damage could be done. Whenever the electricity went out I felt smugly independent: I could heat the house with a wood stove, cook on top of it, and get water by a gravity-fed system.

My parents visited on Memorial Day Weekend and Dad and I painted the outside of the house. Remembering that weekend lets me easily recall when the mosquitoes come out in full force in my woods – just in time for Memorial Day!

In the spring of 1979, Prescott Homes returned and finished the wallboard, plastering, and laying of hardwood floors. Then I painted and finished the woodwork so that, by the fall of 1979, the first floor was completed. Life brought about changes and I eventually sold this house in 1986; then it was sold a few years later to Clarinda Philips. Because she is the special person we have dedicated this book to, we will always refer to it as Clarinda's house.

Julie

In the summer of 1979, I invited members of the Bell Labs Outing Club to stay at my house for the weekend and climb Mt. Whiteface, three miles from the house. This mountain was becoming special to me, the view from my property making it a real part of my life.

Mt. Whiteface is listed variously as being 3995 and 4015 feet high. The discrepancy occurs because the smooth granite clearing where hiking trails end is at 3995 ft., but a short distance away is a more inaccessible higher area, that is 4015 ft. This small

difference is inconsequential to many hikers – but not to those who want to climb all the mountains over 4000 ft in New Hampshire.

Most of the hikers were couples, but there were a few singles. I was alone that weekend because the woman I was dating was at a funeral. Julie Pineo was also alone because her partner didn't enjoy socializing. Our preference for a fast hiking pace paired Julie and me at the head of the group. As we climbed, she told me of hiking the Appalachian Trail in Pennsylvania for a month with only her dog, Spring. Julie impressed me and, as we talked, I was happy to learn that we shared many likes and dislikes. When her father had teased her about growing up and marrying a farmer, Julie had told him that **she** was going to be the farmer. That was the kind of spunky person I was looking for. On September 6, 1980, less than a year after climbing Mt. Whiteface together, we were married. Julie got both the farm and the farmer. It was strange how the random circumstances leaving us both "single" that weekend so dramatically changed our lives.

A Lovely Hill

Julie and I were deeply in love and spent many weekends together in Sandwich. I have an especially wonderful memory of a walk along Glacier Trail. The trail passed the base of a round dome of a hill (actually a glacial deposit called a kame). At the top of the hill was a clearing with soft moss. There we rested, enjoyed the aroma of the balsam firs, and the beautiful afternoon. We affectionately refer to this hill as Love Hill.

A Tree Farmer's Engagement Present

I remember scaring off one prospective date when I told her I was looking for a queen to share my kingdom. I guess that could scare off quite a few people! I was more discrete with Julie, but I still had that goal in mind. Anyone I would marry would have to agree to eventually move to Sandwich. The move might be decades away, but on such a major issue we would have to be in agreement.

To many people, North Sandwich seems remote, too far from a metropolitan area. It takes a special type of person to enjoy living there full time. Fortunately, Julie loved the woods as much as I did. We were very compatible and we decided to get married.

We had purchased land in Kingston, N.H. so that I could be within fifteen miles of my work in Massachusetts, and were building a house whose main source of heat again would be a wood stove. We knew that the customary engagement present was a diamond ring, but neither Julie nor I were interested in that tradition. Instead we decided upon a present that would give both of us a warm feeling – a wood stove! Both of us enjoyed telling our friends about our engagement present which said a lot about our relationship: warm, solid, and practical.

A New Beginning

At our wedding ceremony we told the congregation what we each found special about the other. Below is what I said about Julie. Her enjoyment of nature meant a lot to me.

To all who know her, Julie is special – but the reasons she is special probably varies from person to person. I'd like to share with you some of the reasons she is special to me.

Julie is a happy person who finds life exciting and good. She accepts the imperfections in people without judging them. Because of this she likes people and gets along with almost everyone she knows.

Not only does Julie like people, she likes nature. One manifestation of this was the numerous pets she had growing up – the usual kittens and puppies, but also rabbits and birds and snakes. And of course now there's the dog Spring who's a part of the family. Another demonstration of her liking nature is her going for hikes in the woods, or just sitting quietly in the woods. This is very important to me because enjoying the outdoors is a big part of my life.

Another reason that Julie is special to me is that she is a romantic person. She lets me know her feelings for me in nice little ways. When we go for walks she likes to go hand-in-hand or arm-in-arm. When we go for rides she prefers my truck because it doesn't have bucket seats and she can sit closer.

Julie is very much an individual as anyone can tell who has visited our apartment. There is a lobster pot in the living room for decoration. There are orange crates used for bookcases because she likes them. And the TV sits on cement blocks because they serve the purpose. But this doesn't imply she does not care how things look. We've spent months planning the house in Kingston so it will be pretty and still be functional. She has spent up to an hour shaping a tile for the kitchen floor in Sandwich so it will fit perfectly. And she's spent days selecting and then taping music for the reception today so it will convey the right feelings. While I'm on the subject, I should point out when you hear the song about Jeremiah the bull frog, that was my selection, so don't blame her.

I started out by saying that Julie is a happy person, well Julie makes me happy. I'm entering into this marriage with no fears, even though I realize it will take work to live up to our ideals and expectations. The first priority for the rest of my life will be to be a loving husband to Julie.

The Kingston House

Our first major project together was designing our new house in Kingston, NH. To some extent, a house reflects the characteristics of people just as their clothes do. From me the house got its energy efficiency. From Julie, it got its large size (by my standards) because as a child with four siblings, Julie had always felt cramped for space.

The Kingston house was a contemporary cape. To take advantage of solar energy, we put a lot of glass in the back of the house that faced approximately south (it actually faced 30 degrees west of south. With hindsight, it should have been no more than 20 degrees off south). For further energy efficiency, we asked our builder to use two-by-six construction to allow thicker insulation inside the walls. And the open concept design allowed heat to circulate easily through the kitchen, dining room, and living room.

The main source of that heat was our engagement present, the Fisher Mama Bear wood stove in the cellar. I had used the same model stove in Sandwich and we liked it so much that we decided to stick with success. Heat was circulated from the cellar to the other two floors by a simple and effective arrangement which approximated a wood furnace. A 55 gallon drum, cut in half lengthwise was suspended over the stove. An eight inch stovepipe fit into a hole on the top of the barrel. Sheet metal skirts hung from the barrel to about six inches above the floor, capturing even more heat. Heat rising from the wood stove was trapped by the barrel, then rose through the stovepipe to the waiting upstairs grate. The sheet metal in front of the stove could be held up by a chain to allow wood to be loaded into the stove.

Cold air returned to the cellar via some vents near the outside wall. It was a simple arrangement, but it worked very efficiently. We could comfortably heat the whole house, even on the coldest days, with no circulating fans. And because the house was tightly constructed and well insulated, it was not drafty.

Our neighbor, Mike Terrault, used his considerable expertise to modify our wood stove to provide all our hot water during the heating season, utilizing no electricity. He drilled two holes in the back of the stove so that a loop of one inch brass pipe could be placed inside the stove above the firebricks. The lower part of the loop was connected to the bottom of the hot water heater and the upper part to the top of the water heater. When the fire in the wood stove heated the water in the brass pipe, convection forced the water to circulate through the water heater, in turn pushing cold water back to the wood stove. The only drawback was that the water cooled the fire down, and more creosote tended to form in the chimney. It only took one chimney fire to make me get religious about regularly cleaning the flue.

Heating the house took only three to four cords of wood per year. Twenty per cent of the wood came from our lot in Kingston as I improved the quality of that small forest. Since the lot was less than two acres, it could not have continued year after year yielding twenty per cent of our heat, but initially there were lots of trees that needed thinning. The rest of the wood was brought back from Sandwich each weekend in my pickup truck! When we finally moved to Sandwich, it felt like a vacation since I no longer had to transport wood almost a hundred miles to heat another dwelling!

I brought the wood home from Sandwich in six foot lengths that just fit into the truck. Cutting up the wood into stove lengths in Kingston made me feel I was still working on the Sandwich land and gave me more time to do other things while up north each weekend.

Since I have been extolling the virtues of having an airtight house, I should point out that years later we discovered the tightness of Kingston house gave us radon problems, more than twenty five times the limit suggested by the federal government! I corrected the problem relatively easily by renting a jackhammer and excavating a hole in the cellar floor. A plastic drainpipe connected that hole to the outside and a computer fan blew out the radon laden air. We worried that we would someday develop cancer from breathing radon for so long. But now, more than twenty years later, nothing has happened and we worry more about second hand smoke!

But the moral to this story is to have your house tested for radon, especially if it is a tight house.

Heather is Born

Later in this book, I describe in *The Big Pond* chapter how I was often busy in Sandwich clearing an area for our future pond. While I was making a pond, Julie had been busy making a baby. The baby's gestation period was shorter – Heather was born on June 4, 1983 (8 lb., 1 oz., 20 inches long). Ever thoughtful, Julie had let me sleep until morning after her water broke at two A.M.! What a neat wife.

In fact, a major factor in my deciding to marry again after such a bitter divorce was Julie's sunny personality. I hoped any future offspring would benefit from those happiness genes. And, I'm thrilled to report Heather ranks way above average on the happiness scale. For that matter, her prejudiced parents think Heather is the best kid ever!

Heather was especially important to me because I had not been able to participate in all of Cindy's and Rick's childhood. Some people might think I was lucky to miss their teenage years, but if they reflected on what it means to be a parent, they would realize how incomplete that makes you feel. The best thing about having had a practice marriage was that it made me a much better parent.

Having a new baby cut down on my trips to Sandwich, but between Heather's birth and the beginning of August, I did spend four days there getting ready for the pond's birthday. Bill Read had cut and winched out some tamarack saw-logs from the pond area and had a lumber truck pick them up. I was more than happy to let him have the proceeds from the sale in exchange for his work.

Tamaracks have since become one of my favorite trees. They are conifers, but deciduous! The tamarack's cones make it a conifer, but all its needles fall off every year making them deciduous as well. Their split personality makes them unusual as does their nice soft needles. The wood of a tamarack, while similar to a white pine in quality timber, is also quite resistant to rot, another thing in its favor.

This is My Place

If you are fortunate enough to have been in love with someone, can you remember the exact moment you fell in love? Probably not, because falling in love is usually a gradual process. The same is true of my love affair with the Tree Farm. When did I fall in love with it? Over a period of years.

Eventually Julie and I realized that we would like to live in Sandwich. And we decided that when we moved to Sandwich, we wouldn't live in our weekend house. We loved the newly constructed pond so much we decided to sell our present house with five acres of land, and build a new house on the hill overlooking the pond. We were very excited about it. We planned to use a passive solar design with a walkout basement on the pond side.

We hoped to start building in about five years. In that time, I needed to find a way to rearrange my working life so I could live in Sandwich. I really enjoyed working for Bell Labs, so it seemed like I would have difficult choices to make.

THE BIG POND

Dave Weathers looks at Pond Sites

A stream flowing from Bill Read's property meandered through wet land, and eventually passed through a notch in the esker at a point I called Esker Pass. To my under educated eyes, Esker Pass seemed like a natural site for building a dam to create a pond. The esker stood thirty feet high, almost totally surrounding the area for the proposed pond. And at the dam site, there were steep banks on either side. I estimated that building a dam ten feet high and thirty feet long would produce a two acre pond.

When I asked Peter Pohl for information about pond planning, he referred me again to Dave Weathers of the Soil and Conservation Service. Dave checked out my proposed pond site and told me that a dam there wasn't practical because the esker was built of gravel and would be too porous. He felt that there would be no economical way to seal it adequately enough to prevent leakage. And even if we could use clay to seal the esker, he felt that there wasn't an adequate water supply to support a good size pond.

Instead of creating a pond by damming the stream, he suggested digging a pond in a swampy area close to Chase Road. That was the same swampy area that had prevented my extending Mill Brook Rd. to the street. Dave later sent me the following analysis of that area:

There appears to be a more than ample water supply to support a dugout pond on a year-round basis. There is some question in my mind as to what type of equipment would be necessary to do this actual construction. During the month of August, install 2 to 3 test holes with a crawler type backhoe to determine soil conditions and necessary equipment for the actual construction. From these test holes it will be determined if a drag line is needed for the construction. If so, I believe you will have a difficult time trying to locate a competent operator within a reasonable distance. If it is determined that a crawler bucket machine can do the excavating, then it would be advisable to install an open drain completely surrounding the pond site prior to the actual construction to lower the existing water table and to divert any surface water. Please contact me when the test holes will be going in, and we will try to observe these while they are being dug.

Giving up my original idea of creating a pond at the esker was difficult for me. I had dreamed about creating a truly impressive pond in a picturesque location surrounded by an esker. Not being one to give up easily, I counter-proposed having a smaller dam and thus a shallower pond to Dave, but he told me this would create weed problems and was definitely not a good idea.

I was finally convinced, but my lesser enthusiasm for the alternative site kept me from making immediate plans to start. Maybe I would build it later.

Test Hole at Pond Site

In the summer of 1979, a year later, I finally got around to digging a test hole at the site that Dave Weathers had recommended for a pond. Pond development was not paramount in my life at that time, but my curiosity about the quality of the proposed pond site eventually got the better of me. A test pit could give me insight about how difficult it would be to construct the pond. It would indicate what ground materials would be

encountered during construction and how wet the area was. Since the area was a treed swamp, it did seem there would be plenty of water. But by examining the test hole in the summer time when the water level was at its lowest, I could get a good idea how much the pond's level would drop during dry spells.

The first six inches were hard digging through thick grass roots. The next two feet were easy with black muck that had no rocks. Water trickled in as I dug, but I was able to keep ahead of it. Below the muck there was harder material, probably gravel, and I did find one rock four inches in diameter; the biggest I encountered in all my digging! The lack of large rocks and the good gravel base augured well for the future pond, but when I left for the day, the water was very muddy. The next day, nice clear water filled the hole to within six inches of the surface. There was even a small frog in there, seeming to beg me to dig him a pond! For quite a while I ignored his pleas.

Pond Preparations

All was again quiet on the pond front until 1982! Then, during a visit at George and Sally Zink's, Julie and I fell in love with their pond that Dave Weathers had helped design. We both agreed we'd love a pond of our own. The expense of building our new house in Kingston had made us delay pond construction, but this seemed like a good time to proceed.

So I contacted Dave Weathers, telling him that I had dug a test hole at his recommended site and that the water level there had never fallen more than six inches below ground level, even in the heat of summer. In the fall, Dave viewed the pond site again and offered specific suggestions including digging larger test pits so there would be no surprises when the pond was constructed.

A couple of weeks later, with Dave present, Bill Read dug three test holes. All had rich, black topsoil at least two feet thick. The water table was near the surface at all of the sites as well, so it was proclaimed a great site for a pond. But the high water table made the use of a bulldozer difficult unless preventative steps, such as digging a drainage ditch, were taken to dry up the area. Before leaving, Dave suggested that in preparation for the pond all trees should be cut down, then sawed in sections less than sixteen feet so that a bulldozer could easily remove the logs. He also pointed out that lots of gravel would be hauled out of the pond site during its construction. That implied I had to clear adequate spots to utilize that gravel. By planning ahead, I could end up with a road around the pond. And he reminded me that I had to apply to the State of New Hampshire for a Dredge and Fill permit. That was later approved with no hassles.

After Dave left, Bill Read and I planned a route for the drainage ditch, close to the edge of the treed swamp so if he ever got his back hoe stuck he could winch it out. He could dig the ditch in mid December and it was my job to have the area cleared by then.

Construction of Drainage Ditch at the Pond Site

We started digging the drainage ditch on December 29, 1982 when record breaking warm temperatures had thawed almost all frost from the pond site. It was so muddy that shortly after we started we almost gave up when the backhoe's wheels sank three feet into the muck. But after a two hour struggle, we finally made it to relatively dry ground and began work on the trench.

To make progress, we learned how to build what Bill termed a corduroy road. We placed small logs side by side along the path the backhoe would take, making it seem as if the backhoe were floating slowly along on a raft. The trick was using lots of small

diameter saplings about ten feet in length, small enough in diameter to be maneuverable, the long length allowed them to fit under both wheels. The extra caution was worth it because once stuck, a great deal of time and energy was needed to extricate the backhoe: first lifting up a wheel by bracing with the bucket or hoe, then pushing a log under the wheel and putting weight back onto the wheel – only to watch the wheel sink again, repeating the process again and again until the logs would finally support the backhoe. Inching forward along our corduroy road, I would take the logs from behind and carry them to the front, remaking the road as the backhoe made slow progress. After the first day we no longer got stuck because we became expert corduroy road builders.

The land rose, so to keep the ditch bottom relatively level, we dug deeper as we proceeded. And the deeper the trench, the wider it had to be to prevent cave-ins. By mid afternoon I estimated that we were only covering fifteen feet per hour. The expense of continuing at that rate was more than I could afford, so I asked Bill to keep the depth above five feet and to narrow the trench – which seemed safe because the sides had been holding so well.

During this project, my engineering training for analyzing problems served me well. Bill was the one with the backhoe expertise, but I was the one supplying the money. I tried to be diplomatic with my suggestions, knowing that if they were ill informed, I would have no one to blame but myself. And twenty years and many projects later, we are still good friends.

After a restless night of deliberating, I decided to further reduce the ditch, making it narrower and only four and a half feet deep. I knew I was gambling because the narrower ditch might collapse, but the solidly compacted gravel made me willing to risk it. In spite of the smaller trench size, it took another two days to complete the job.

When we finished, the drainage ditch was 500 feet long, four and half feet deep and four feet wide. And I felt as if I had carried the backhoe the whole distance on my back! But it was worth the effort. The water was flowing very nicely when we left and the water level at my hand dug test hole had drained by half a foot. When I returned the next weekend to clear some brush at the pond site, the drainage ditch was peacefully doing its thing, water flowing gently with no cave-ins at all. Ah, sweet success. And all winter the water flowed unceasingly with no cave-ins and no ice blockages.

Discovering the Western Boundary

Before digging the pond, I wanted to find the western boundary since the pond site was close to it and I didn't want to cause any hard feelings by clearing on my neighbors' land. Even if the Marinos were understanding, as they probably would be, it would still be a problem if part of the pond strayed off our land. In New Hampshire, a pond entirely on one's land and not larger than five acres is a private pond. Any variance of that and it would be public. If all of the surrounding land owners posted their land as private, there would be no public access to the pond; but a state fishing license would be required for landowners to fish in "their" pond. I didn't want to get a license to fish in a pond I built, so I was very motivated to find the western boundary and keep the pond in my territory.

Fortunately, I knew the locations of two well-identified points, iron pipes at either end of the western boundary. But the pipes were separated by over 3000 feet. I spent many weekends tracing the boundary, starting at the southwest corner and proceeding north. Only the first few hundred feet of the boundary had been blazed in the last few decades. But those first few hundred feet did give me the direction of the boundary.

Because it went in a straight line I was able to clear a straight path and then extend the line by sighting along a 100 foot length of rope. About 1000 feet into the process I found a large tree with barbed wire sticking out of its center. What a thrill, not only was I on the boundary, I had found another link to the past. About 100 feet further I discovered a flat, circular piece of metal nailed to an old hemlock – probably a mark left by a surveyor long ago.

Then I came to a beaver pond that blocked my way for a couple of hundred feet. I walked around it and continued along the boundary the best I could. When I had extended the line to Chase Road, I discovered that I had missed the pipe at the northwest corner by only 50 feet. An error of 50 feet out of 3000 is an error of only one degree, so I was quite happy. To compensate for the 50 foot error, I adjusted the boundary line as far back as the beaver pond, where I thought I had gone astray.

In the process of establishing the boundary, I discovered that a small grove of planted red pine that I thought was over the boundary was actually ours. I also discovered that a storage shack of Len Marino's was on our land, where it remains today, presenting no problem. Most importantly, the pond site didn't stray across the border. I could begin pond construction with a clean conscience and a new stand of red pines.

Pond Site Preparation

The winter was ideal for clearing the pond site with never more than a foot of snow on the ground, the smallest snowfall since I started coming to Sandwich in 1975. What good luck for me. Six inches of snow is about perfect for tree cutting, not so deep that a tall tree stump is left, but deep enough so the felled tree lies on a cushion of snow, which acts as a long continuous sawhorse. Then it's easy to limb the tree and cut it into sections without striking the ground and dulling the chain.

Clearing the pond site took most of my free time during the winter. I cut all the brush and small trees, running my chainsaw at full speed so it wouldn't get stuck on small branches and twigs. Years later I bought a brush cutter and found it would have worked much better in the first stage of pond site preparation.

The next step was felling the larger trees that I planned to use for firewood, stacking them at the edge of the site until spring when I could get them with my pickup. Then, after the firewood was carried out and there was less rubble to walk through, I cut the remaining trees into lengths no greater than sixteen feet so a bulldozer could easily push them. Although I was told it was not necessary, I limbed the trees to make them easier to push by the bulldozer and easier to bury. It seemed a shame to just bury trees – but the ground was too wet to allow heavy equipment. If the ground had been dry, the trees could have been harvested by mechanized logging equipment.

By the end of winter, I had finished clearing the pond site but I still needed to clear areas around the pond for storing the gravel removed during pond construction. In April, when the ground had thawed, Dave came by to see the pond site and tell me what else needed to be done. Lloyd Drew of L. A. Drew Construction and Jock Smith, Drew's best heavy equipment operator, also came to look the site over.

Dave hadn't seen the pond site since the drainage ditch was put in and the commencement of the site clearing. He was surprised to see how dry the site was, especially near the ditch. Jock didn't think it would be too difficult to dig the pond with a bulldozer and said he had done some in considerably muddier areas. He had found that working in some muck wasn't too bad if there was a good gravel base like ours. Because

Dave had encouraged the construction of that ditch, great changes had taken place since the test holes were dug. I was so satisfied with the results that I asked if I should extend the ditch so that other wet areas could be drained. Dave agreed that it would be a good idea.

When Bill Read and I started digging the drainage ditch extension, we found that looks were deceiving. What looked fairly solid was actually peat and it was very easy for the backhoe to get stuck there. However, we had learned how to work in such a situation during our previous ditch building, and the backhoe never got stuck for long.

Five hours of work got us halfway done – about 100 feet of ditch. As usual, that required a lot of physical work and that, combined with a week of brush clearing, was getting me worn out. Bill, observing my diminished energy level, suggested that Paul Henley help the next day. For once I was willing to let someone else do some of the grunt work. We finished the ditch the next day and I was confident that the site would be nice and dry for the summer's pond construction.

Chainsaw Accident

After the drainage ditch extension was completed, I still had more clearing to accomplish – to produce cleared areas for storing the gravel removed during pond construction. One morning during pond site preparation I was doing my thing – cutting trees, limbing them, cutting them into sections, and carrying them out for future pickup-truck loads. While I was limbing a tree, I raised my left knee too high as I moved toward the next limb. The chainsaw made a hole in my pant leg and I put the saw down and spread the tear open to make sure my leg had not been cut. Then I thought "Oh-Oh." Even though I felt no pain, I saw a bloody gash on my knee. Obviously stitching would be required, so I left the saw where I had hastily placed it and hobbled to the Marino's – which was closer than our house. Julie would have to find out later about my problem.

I knocked at the door, and Len said he would be right there. But after waiting for what seemed a long time, in reality probably less than a minute, I yelled, "Hurry up Len." Not used to pleas like this from me, he knew something was up and hurried to the door, offering to drive me to the Wolfeboro Hospital emergency room. I gladly accepted. Before leaving, he called ahead so they would be expecting me.

Now Len was a very cautious and law abiding driver, which most would consider a virtue; but on that trip I considered it a sin. Part way there the leg ceased denying that it had been cut and began hurting with a vengeance that I communicated to Len. He sympathized, but didn't alter his speed.

At the hospital things went smoothly, helped by experienced garnered from previous chainsaw victims. I learned that the left knee was the most common area to be savaged by a chainsaw. Luckily the doctor who sewed my leg up was very talented, doubled stitching it – six stitches in deep and six more near the surface. Finding out that she did not consider my chainsaw cut very bad (no bone was chipped), improved my spirits. In fact, I asked if I would be able to continue working in the woods the next day. She gave me a funny look and said, "If you want to". As it turned out I did not want to. But thanks to her, the knee healed up very nicely and I was left with only a thin scar. And more importantly, no lasting ill effects came from my mishap with a chainsaw.

When I returned home I found Wanda Janiszewski, Len's other half, at our house having tea and donuts with Julie. Wanda had told Julie about the accident and they were drowning their anxieties in food. My parents were there too as they were spending the

weekend with us. So they wouldn't worry, Mom and Dad had been kept in the dark about my accident.They found out I had blundered when I limped through the door!

A week later when I met Don DiFillippe, a neighbor of ours, he told me how lucky I was, which I already realized. While I was left with only memories, his leg still bothered him from a chainsaw injury years earlier. In fact, I am glad that the accident happened because now, when I use my chainsaw, I often picture the bloody gash and that keeps me more alert to the dangers.

Julie's reacted angrily to the chainsaw incident, which surprised me. I was certainly angry at myself, but I thought the pain and associated forced inactivity was punishment enough. But her anger stemmed from feeling she would always have to worry when I was cutting in the woods, no longer trusting me to be careful with the saw. Len worried as well. During my first post-accident chainsaw outing, I was cutting at the pond site, resting periodically so I wouldn't have a lapse of attention again. During my first rest period, Len came out to make sure everything was OK. When the chainsaw went quiet, he was worried I might have just hurt myself again! Fortunately I learned my lesson; one accident and I have never cut myself with a chainsaw again.

Because of that chainsaw gash, I instituted a new rule for myself. Whenever I limb a tree and move along that tree from one spot to the next, I turn the saw at a right angle to the direction I am walking so that I can't raise a knee into the chain.

Len

Len Marino was a big help when I had my chainsaw accident. Now as this section of the book is being edited for publication, Len is no longer with us. He died in 2003 because of hemocromotosis, a relatively rare genetic blood disease that causes the body to retain too much iron. By the time Len's condition was diagnosed, too much damage had occurred to his liver. It took more than a year of slow deterioration before his body gave up the struggle[2].

Len was my best friend. This area is not the same now that he is no longer with us. I still think of him in the present tense, and it is fitting that this section is so written. What follows is how I remember Len.

Len is not what he first appears. The clothes he wears around the house are chosen because they are functional, not because they are fashionable. More often than not, the shirts and pants will have holes in them. And I've witnessed shoes held together with duct tape. Yes, he could afford to wear better, but why would a practical person wear his "betters" when they would suffer from the daily tasks? Right on Len, we look as if the same tailor dressed us.

Len firmly believes that God gave him legs so that he can walk to his vehicles. A favorite pastime of his is driving around our wood roads in a battered Datsun sedan. He purchased it from the Reads when the car body was so rusted that it would no longer pass inspection. Len, who is a law-abiding safety-conscious person, knows that the best way to unwind from a hard day's work is to drive SLOWLY along the Tree Farm roads drinking a beer. I think he gets a kick out of this since he realizes such action is justifiably illegal on the highway, but perfectly all right here.

~~and suspect it might have~~ been from liver problems, it might be a good idea to have the simple test for hemocromotosis. It is much better to be overly cautions than dead.

Yes he does occasionally get stuck in the woods because the roads are: narrow, bumpy, and very often muddy. Being stuck is treated not as a calamity, but as a challenge to his ingenuity. It might take a few hours, but by placing brush under the tires, using a come-along, or perhaps finally resorting to pulling with another vehicle of his, he eventually gets out.

I'd be remiss if I did not go into more detail about another vehicle of his, an antique pickup truck. The truck catches your eye. Nothing fancy, but clearly old. It seems to say, I'm what a macho good-old-boy would drive. In fact, a person who was responsible for creating TV ads stopped Len one day and asked if they could use the truck in a beer commercial. Thrilled, and never one to miss a real opportunity, Len replied sure, but only if he would be the one to drive it. And drive it he did. The ad appeared during a number of NFL football games. To this day, he likes his beer.

Although he would rather drive than walk through the woods, Len certainly does enjoy the outdoors. He prides himself in knowing good places to catch trout that are known only to a chosen few. When he frequents those spots he almost always catches fish. His secret? He only goes if fish are jumping in our pond!

His ingenuity extends to anything mechanical. One of his classic inventions was a dumper he made to go behind his Datsun. Per usual with his devices, this was put together from a number of no longer functioning items. What impressed me most about the dumper was that Len could pull a rope to dump it while he was sitting in the driver's seat. And then the dumper would right itself and Len could drive off without ever getting out of the car! Never waste any steps.

For years Len apprenticed to "Silk Hat" Baunerman, an auctioneer of considerable local fame. The apprenticing started off by helping out as a runner – bringing the item to the successful bidder. Eventually he was licensed as an auctioneer and each year he runs a charity auction for the Tamworth fire department.

The non-charity auctions certainly help supplement his income, but that is not his profession. This laid back person who cultivates his image as a simple country person is a computer scientist by training. He graduated from Boston College and worked for years in the Boston area. Even before I bought land in Sandwich, Len was doing what I eventually did – working a scientific job in the city and living a different life in the woods on weekends and vacations. In fact, his dad had the place up here all during Len's childhood, so he bonded to this life early.

There finally came a time when Len decided there's much more to life than living in the city so "good" money can be made. He took the plunge and moved to Sandwich to his parents' vacation house. When he made the move, computer related jobs were harder to come by in the north country than they now are. Times were hard at first, but he adjusted his living standards accordingly and managed to find enough work to get by.

Now he occasionally works a 40 hour a week job for a firm, but he prefers to work as a consultant. That way he is more his own boss and he can choose how much he works. And quite often he has more important things to do than earn money.

How can he afford to be so independent? There are three reasons: his ability to turn other people’s castoffs into functional items, he doesn't have expensive tastes, and he has Wanda. Wanda and Len have been together since the days in Boston. Together they took the gamble and moved north. Here in Sandwich, Wanda has found a need for her talents. Many people like to come to Sandwich to retire, so there are numerous households that need the help of a woman. Wanda does a little bit of everything: cleaning,

running errands, driving a person someplace. Her specialty is being a working companion. She helps around the house, while at the same time helping to keep the person in contact with the world.

Wanda, when you read this I hope you understand why you weren't mentioned until the end of this dissertation about Len. Neither you nor I are characters, but Len is. I wanted to introduce the readers to the person who best understood my desire to move to Sandwich. In many ways Len and I appear to be quite different, but when we get down to what matters, we are very much kindred spirits.

Safety in the Woods

Len was fond of giving me tips on safety. Perhaps it is fitting that I in turn give the reader some safety tips.

I'll relate another accident that almost happened, but this time luck was with me. Gray birch trees often get bent down by heavy snow and are not strong enough to straighten up in the spring. I make it a habit to go around and salvage those trees for firewood. I had long believed that the center of gravity of a tree wouldn't move backwards as a tree is falling unless the wind blew it or it bounced off another tree. It was my own scientific principle.

I began cutting a bent-over birch that had no trees in front of it to force it backwards, and the wind was not blowing. I thought all was well. I was kneeling to one side of the tree and had chainsawed almost all of the way through the tree. All of a sudden there was a loud snap, the butt of the tree launched itself into the air, and the entire tree moved backwards! On the way down it gave a quick karate chop to my chainsaw. This all happened faster than my eyes could follow. As if by magic my hands were empty and there was the saw on the ground. Other than a slightly sore wrist, I was none the worse for wear, and the chainsaw was also fine.

My after-the-fact hypothesis of why the tree jumped backwards was that the bend of the tree acted like a coiled spring. It contained stored energy and that potential energy was suddenly converted into kinetic energy, causing the tree's center of gravity to jump backwards. If I, or a bystander, had been behind that tree, a serious accident would have occurred. I now have greater insight and more respect for bent trees.

Before I had the near miss with the "coiled spring" tree, I knew that notching a tree could direct where it would fall and I occasionally notched a tree to give it a nudge in the right direction. But years later I learned from Bill Read that the notch also can release the "coil spring energy" and prevent the tree from jumping backwards.

The coiled spring birch tree had the potential to break some bones, but I doubt it could have fatally wounded me. But over a decade later, I did come uncomfortably close to having a fatal chainsawing accident. A mature maple tree, well over a foot in diameter, had split at a weak point fifteen feet above the ground. The upper portion of the tree had hinged from that weak spot and was touching the ground. The tree was unsightly and dangerous, but good for firewood. Before attacking the tree with my chainsaw, I carefully analyzed the situation because the upper section of the tree was potentially a widow maker. Cutting in front of the tree was not an option because I would be directly under the widow maker, and that would be tempting fate. I didn't want to cut from behind the tree because the widow maker might push the tree backward towards me. I finally chose the uphill side of the tree because it seemed the safest location. I notched the tree on the

opposite side to eliminate any "coiled spring" energy and to help direct the tree safely away from me.

Then I chainsawed almost all the way through the tree with no problems, and stopped, deciding to finish the off the job by pounding in a wedge. I anticipated that driving a wedge into the chainsaw cut would force the tree to fall exactly where I wanted it. This is a common tree felling practice. So taking turns with my nephew Adam Pineo, we drove the eight inch wedge totally into the tree, until it could no longer be hit by the maul (sledge hammer). Still the tree wouldn't fall. So I went back to using the chainsaw again and cut through almost the entire trunk, being careful not to saw into the metal wedge. Still that stubborn old tree failed to fall. Fortunately, by then I had a backhoe, and enlisted it into the battle. I raised the bucket up, pressing it high against the tree to push it in the downhill direction. But, in what seemed to be a fraction on a second, the tree fell directly opposite to the direction the backhoe had been pushing! That widow maker fell right where Adam and I had been alternately driving the wedge into the tree! If one of us had still been in that spot there would very possibly have been a fatal accident. Fortunately, inside the backhoe, we were just shaken psychologically.

So what had gone wrong with my careful planning? I had noticed that the hinged section of the tree was leaning against another tree. However, I had erroneously concluded that it wasn't storing much energy and the wedge would be able to force the tree to fall in the opposite direction. That was totally wrong. Before cutting, the tree had been poised to fall in the uphill direction. Fortunately the wedge had held the tree from springing backwards. But when I was confronted with such a potential widow maker, I should have first enlisted the help of the backhoe. In precarious situations such as that I usually use the backhoe's hoe to gently apply pressure in the direction I want the tree to fall, continuously pressing with it while I chainsaw, protected by my mammoth friend. However, during this chainsawing project, I was over confident and didn't use the backhoe as an insurance policy. Lesson learned.

But what if a backhoe is not available, or the terrain does make access for a backhoe possible? There is nothing wrong with leaving a dangerous tree alone! Occasionally I now decide to let nature take its course. After all, a slowly decaying tree can provide many homes for wildlife.

Meanwhile, digression about danger done, let's return to the creation of the pond.

Digging the Pond and Creating a Road

On Monday August 1, 1983, Jock Smith (from L. A. Drew Co. of North Conway, NH) brought in his bulldozer[3] and removed the first bucketful from the pond site! For many days, his 755A John Deere bulldozer with an 8 foot wide bucket was the sole machine used in the pond construction. At 18 tons with massive proportions, it was just the right tool for creating a pond, cutting wide swaths through the top soil and then the gravel.

For two days it scraped off the top layers of material, pushing them to the south side of the pond, forming a long pile ten foot high. That heap contained trees that had been felled, their stumps, and lots and lots of rich, black muck that would turn into awesome topsoil once it dried. The muck just kept on coming. Its depth on the pond site

[3] Sandy decided the spelling should be *bulldozer* not *bull dozer* so the mechanical beast would not be confused with a sleeping bull.

varied from two to five feet, with muck so deep at the west end of the pond we had to stop ten feet shy of our proposed destination.

Dave Weathers came by on the first day to help with some surveying. I walked the outside of the cleared area and we determined that it enclosed two and a half acres. To think I had cleared that all by myself! Then he had me flag where I wanted the water's edge to be and we found that the pond would be slightly less than an acre. As the pond construction progressed, the cleared area increased to three acres and the pond to one and quarter acres. Some of the increase in size was to have a large enough area to store the excavated gravel, and some of the increase was to have a larger pond. The more we worked there, the more we realized what a special site it was.

By Tuesday, the second day of construction, we had to pump the excavation site. It was filling in from ground water, augmented by water from a substantial rainstorm, and was slowing down the bulldozer's progress. A heavy duty pump was brought in, and for the rest of the pond's excavation it was an essential member of the team. My dad was visiting so he could observe the pond construction, and he contributed many hours to keeping the fickle pump operating.

For a day and a half Jock removed gravel from the west end of the pond, pushing it via a ramp west toward Mill Brook Trail. Since it was slow work for the bulldozer, he decided it was time to call in reinforcements – an excavator. An excavator is a large backhoe-like machine that travels on caterpillar-like tracks and can swivel 360 degrees.

The excavator's ability to work in wet areas made it a great partner for the dozer. The excavator would sit in one spot, taking a bite of gravel from as far away as it could reach, then turn and deposit the gravel as far as it could reach in the opposite direction. From there the dozer pushed the gravel to its final destination as the excavator swung around for its next bite from the all-you-can-eat buffet.

When a section of the pond was finished, the excavator smoothed the pond's banks using the curve of its bucket to press rocks into the dirt, making the edge much nicer. The final part of the pond's perimeter to be completed was the beach area on the east end, adjacent to the pond's outlet. I had the beach area sloped much more gently than the other banks so that Heather and other small kids could play on the shore there. In the end, that was not a good thing to do since the shallow area allowed weeds to grow.

On Thursday afternoon we got lots of rain – more than an inch and a half, not good timing on Nature's part since we were anxious to dig a deeper part of the pond. Up until then, the pond's depth was dug to eight feet. But we wanted to have a ten foot deep section in the middle to create a cool area for trout. To lower the water level so that we could dig the deep section the next day, I had to run the pump all night, refilling the pump with gas throughout the night. When I walked to the pond at midnight, it was very dark, raining hard, and my flashlight was weak

After filling the pump with gasoline, I groggily climbed out of the pond and became disoriented from going over the piles of gravel. When I eventually found the beach and the beach road, I wandered up the road zigzagging from side to side to determine where the edge of the road was. But I quickly became disoriented again and thought it was possible that I would have to spend the rest of the night in the woods! But fortunately the headlights of a passing car helped me determine where Chase Road was. I finally made it to the road and went gratefully home.

But my efforts during the night had been worthwhile. The next day we were able to deepen the pond for the future trout. Jock finished his dozer work in the pond area then

spent a considerable amount of time smoothing the area around the pond and the new road. Because of the fantastic gravel at the pond site, an excellent road was created which allowed access to the western side of our Tree Farm without using the Marino's driveway. Hurrah, independence!

While Jock was using the dozer to smooth the new road, Mark used the excavator to smooth the banks of the pond. When it was finished, he just sat in the machine and looked around for a long time. I could almost hear him thinking: "Look what I've done!"

I was very pleased with the finished shape of the pond. The combination of a cove, sloping beach, and brook outlet was very pleasing. I appreciated Dave Weathers allowing me to determine the shape of the shore line after giving me plenty of hints about what made a good looking pond. That made me feel as if I had designed the pond. Thanks, Dave. We did a great job! Thank too, Jock and Mark, you did great.

The day the pond was finished, Dave asked me if I realized what I had there. He felt I was not showing the expected enthusiasm for a pond that had turned out to be one of the best that he had helped with. I was feeling too shell shocked from the physical and mental strain to exhibit the expected elation. For two weeks I had been feeling under pressure, doing all I could do to help the pond come out well. Some of my efforts were physically draining, and some were mentally stressing. I had often fixated that the project was costing two dollars per minute, a frightening thought that certainly motivated me to participate more in pond construction than the average land owner. I felt my labor had helped to give birth to the pond. So, yes, Dave, it was very special to me.

Landscaping Around the Pond

A week after finishing the pond I was back in Sandwich working on the pond site. It was time for cleaning up the mess left from the excavation. George Zink had warned me there would be as much work after the pond's birth as before. And I was beginning to understand what he meant.

Except for the very wet south side of the pond, the bulldozer had smoothed the excavated gravel, helped by the fact that there were no excavated rocks larger than a foot in diameter. In spite of that, the areas around the pond were rougher to work with than I had anticipated. The sun had baked the gravel to the hardness of adobe or what I imagine adobe to be like, having never touched any. I prided myself on having tough feet, going barefoot as much as possible, but found the sun-baked dozer tracks too rough for my bare feet.

Then Len came up with a valuable and unique suggestion. We could drag an old bedspring behind my pickup truck to smooth the area, and he even supplied the bedspring! To add to the efficiency of the process, we piled some heavy rocks on the bedspring. The rocks occasionally bounced off, but they worked so well that it was worth the hassle of stopping to put them back on.

Dragging the bedspring over an area loosened rocks and often pushed them to one side. Then those rocks could be picked up by hand, set in a wheelbarrow, and dumped in low areas that needed filling. We eventually increased the efficiency of our smoothing operation, when workers allowed, by having one person driving the truck, one riding on the bed spring to replace the weight of the rocks, and one picking up rocks. And the person riding the bedspring didn’t fall off as often as the rocks had! My 73 year old Dad even rode it once, and was none the worse for wear.

Years later I constructed another pond. This time I had a backhoe and it greatly simplified the landscaping process. Back-dragging dislodged rocks easier and better than a bedspring, and the buckets obviated the use of a wheelbarrow. But for this first pond, finances dictated a more labor-intensive approach.

The pond filled more rapidly than I had dared hope. Even in that dry summer, the pond had more than three feet of water the first week, all spring fed. By three weeks, the deepest point was over my head, and by Thanksgiving weekend it had started flowing out, meaning the deepest part was then ten feet.

The next spring (1984) was dedicated to grassing the area. Except for the south side of the pond, there was no topsoil. Barren gravel glares in the sun, while grass has a restful appearance. Dave Weathers said it was possible to grow grass in such areas, provided the area was first limed and then hay used as a covering to allow the grass to start in the hostile environment. And he was right!

I never did get around to seeding some areas around the pond and over the years, those spots chose their favorite coverings. Each year, fir, red spruce, birch, and poplar continued to try to reclaim the sunny areas; and I, just as stubbornly mowed them down a couple of times each year. Wildflowers bloomed and as I mowed I tried to dodge them and encourage their dissemination. The shaded areas had a thriving crop of timothy and clover, low growing legumes that naturally fertilize the soil by adding nitrogen. As a result, in ten years the non-planted shaded areas were lusher than the some of the planted sunny spots and the pond surroundings were lovely!

Water, Water Everywhere

A rainy fall followed the pond's birth. Even though water flowed out, the water table continued to rise. Streams flowed into the pond at three different locations. Water flowing into a pond is good for preventing stagnation problems, but if the water gushes in wherever it chooses, it creates erosion problems and can slowly fill pond with sediment. I took temporary action, diverting the flow around the pond or placing rocks to prevent erosion. But permanent solutions had to wait for the next year when I had more time.

The next spring Bill Read created three distinct entrances for streams flowing into the pond. In a normal year we found that the streams into the pond dried up by the end of June, but the pond's outlet kept flowing until August. And after the outlet had dried up, water could still be seen seeping into the remains of the drainage ditch beyond the pond, evidence that the pond was spring fed year round. The springs minimize how much the pond level drops in dry years, and make for happy well oxygenated fish. Yes, we had found the perfect place for a pond.

Trout for the Pond

That first spring the pond had thousands, if not millions, of small black tadpoles. Because the pond was so new, it lacked the natural enemies of tadpoles to keep the numbers down. The following spring was the last plague year for tadpoles. We noticed that the salamander population was increasing, probably performing a balancing act with the tadpoles.

To add to the pond's diversity, in May of 1985 I bought 200 three to four inch long brook trout and 50 six to seven inch ones. All survived their transfer to the pond, but a couple hours after being placed in the pond, I saw some going through the pond outlet and more headed that way. It seemed as if brook trout prefer brooks to ponds. Duh, is

that why they are called brook trout? I don't know how many escaped, but I didn't cry over lost fish because I had another problem to solve! Problems are fun to an engineer.

My temporary solution was to block the outlet and cause the water to flow out through screened pipes. The screened outlet pipe proved a temporary training device for the trout. In a few weeks when the dam was removed, most of the trout seemed content to stay in the pond.

A favorite pastime became watching the trout jump. In spring times they put on their splashiest displays. During the first three springs it was not uncommon to see splash circles on the pond from five different trout at one time. The trout became so content in the pond that they spawned and had lots of babies. But as years passed, the number of trout in the pond diminished. It wasn't due to over fishing since I rarely fished, and Len probably averaged less than five fish per year. Also, Len was vigilant enough to make us confident that human trespassers weren't the culprits. Otters and herons were the main suspects.

I was very excited the first time I found an otter swimming in the pond. He was so cute. But then I remembered that otters ate fish so I drove him off, throwing rocks at him to protect my trout. One winter I discovered two otters swimming in the pond and again I used rocks to make them feel unwelcome. Both clever and stubborn, they swam under the ice popping up in open spots, but eventually they got the message and left.

I also rolled up the welcome mat for heron. I enjoyed watching these large prehistoric looking birds, but they also have an appetite for trout. Even with my offensive tactics, the otters and herons cut the trout population so greatly that there seemed to be none left. Thinking that the fish had been wiped out, I restocked with 100 rainbow trout, choosing the rainbow trout because I thought they might be less likely to swim out the brook outlet.

But the otters and herons didn't have a day job and had plenty of opportunity to feast when I wasn't on guard duty. Subtracting two or three fish a week would finally add up to no trout, and that eventually did happen. I gave up on stocking the pond with fish, so birds, otters, and people all lost.

The Junkies

Most healthy ponds support many types of living things and ours was no different. First it was "the plague of the tadpoles", and then it was "the plague of the junkies". The junkies was Heather's unaffectionate name for an iron loving algae that thrived in our iron rich pond water. By 1988, a feathery carpet of the algae covered most of the bottom of the pond, so soft that it was difficult to feel with your feet. But walking on the algae loosened patches that would drift to the surface and bob nastily toward my daughter. Small globs sometimes had the audacity to stick to her skin while she was swimming.

Those globs did no harm and were easily washed off, but to a girl used to bath tubs and swimming pools, they were an affront. So raking the bottom and sweeping the surface of the pond with the rake to push the junkies from our swimming area was my job when we swam. The problem (at least in Heather's mind) was worst in the spring, but when swimming activity increased, the turbulence helped to rid the area of junkies and reduced my need to patrol.

Black Plastic For The Big Pond

As the years progressed, so did weeds in the pond, reaching a little higher towards the surface every year. By 1995, a weed species that looked like a stalk of spaghetti was

reaching heights approaching six feet, bringing it within two feet of the pond's surface in many locations. And a bushier species was only a foot behind, more annoying than the spaghetti monsters because the feathery foliage provided a convenient home for Heather's dreaded junkies. The kicking of a swimmer dislodged the slimy pests, causing them to float to the surface. Obviously, something had to be done.

To solve the problem, I used the approach common to gardeners nowadays – I spread black plastic sheeting over some of the area to prevent sunlight from getting to the offending weeds.

I bought four rolls of black plastic, each roll theoretically providing coverage for an area ten feet by one hundred feet. *Theoretically* because spreading the sheets flat on the bottom of the pond was easier said than done. Before trying to install the plastic, I drilled holes in it, both to make it easier to sink the sheeting and to provide escape holes for air that would bubble up from the pond's bottom. To speed up the process, I made rows of holes with my drill while the plastic was still rolled up.

Then came the real challenge, sinking a sheet of plastic to the bottom of the pond. In the fall of 1995 we made our first attempt. Heather held one end of the plastic sheet, while I rowed across the pond slowly unrolling it as I went. Because the sheet was longer than the pond's width, I was able to stretch it to the far banking. Then we tied ropes to the four corners and attached those ropes to anchoring objects: the bumper of my pickup truck and various handy bushes. When the sheet was pulled taut, we gingerly placed small rocks on the sheet, working carefully to avoid tearing the plastic. And the sheet did slowly sink, but the intruding weeds caused peaks and valleys in the sinking plastic, causing many of the rocks to slip off. We persisted, piling on more rocks, but when finished the ten foot wide sheet spanned a distance of no more than six feet. It was going to be a slow process! Discouraged, we decided we should wait to finish the job in the spring before the new growth of weeds was tall enough to give us the same problems.

As anticipated, in the spring the weeds were dead and decaying on the bottom. New growth had not yet started in the cold early spring and the installation went much more smoothly. Julie, Heather, and I installed the three remaining sheets of plastic, and got each one to cover about an eight foot swath. So all told, we plasticized a thirty foot wide strip from one side of the pond to the other.

And it worked! The swimming area near the beach stayed weed free. Over the years, algae and other debris produced by the pond slowly covered the thin plastic film. But ten years later the ribbons of plastic can still be seen from the house in the spring when the pond water is at its clearest. And they are still doing their job of preventing weed growth.

But as years progressed a funny thing has happened. The weeds became less and less of a problem! What happened? I wish I knew. Maybe the pond evolved beyond its weedy stage, as it had passed through the plague of the pollywog era earlier. Perhaps this is only a lull in the war of the weeds and they are regrouping down there and eventually will win. The evolution of a pond, however slowly it proceeds, goes from filling with sediment, to becoming weedier and weedier, changing into a swamp, then a treed swamp, and perhaps becoming a forest some day. Someday in the next decade or perhaps a few thousands years, man/woman will have to intervene again if this pond is to be kept a pond!

WILD THINGS

A Close Encounter with a Bear

Early in April 1978 we had an unusually warm day in the low 70's with the sky a deep blue, but snow more than a foot deep. The light breeze seemed to be saying, *winter is finally gone, I bring you spring.* What a day for a walk!

As I sauntered through the snowy woods (normally one trudges through snow, but not on a day like this) with a feeling of exhilaration, I was brought quickly to a stop by the freshest bear tracks I had ever seen. I could see the individual toe prints and even the claw marks. And because the tracks were in the sun they must have been made very recently or melting would have blurred them.

My heart began pounding with the excitement of the chase. I started walking quickly, following the tracks. My mind raced along too. He must be near, I might come upon him at any moment. Then I thought, *I might come upon him at any moment. And what then? He won't be happy to see me. In fact, he might be very grouchy and very hungry from his long winter without any food.*

Thinking of being chased by a bear, my heart started pounding. I turned and started walking quickly in the opposite direction! Even though I never saw the bear, the feeling of his closeness is burned in my memory, contributing to the feeling that these woods are filled with wildlife, the way they have been for thousands of years. I am encircled by nature.

A Tree Farm Needs Wildlife

Picture barren rolling countryside, no trees, no shrubs, no wildlife. How uninteresting! Or picture acres and acres of fields dedicated to just one crop. Those acres may be productive, but there's not much there to keep your attention. Trees have been a part of my life since childhood. The hills need trees to be alive, trees and shrubs. But without wildlife there is something missing still. Woods need wildlife to be complete, in the same way I felt a marriage needed children to be complete.

Sometimes I feel like a king and these woods are my kingdom. But while I legally own the woods, they are not really mine. How can one own part of nature? It is easy to understand why the Native Americans did not comprehend the White Man's concept of land ownership. I'm happy that our laws let me have a deed to this land, but I feel that with the deed come responsibilities to my tenants, the living things on the land. I hoped to improve the wildlife habitat so that my kingdom would have a growing population.

The Swamps

The creation of the pond replaced three acres of wetlands with the pond and a road around part of its perimeter. Whether the remaining wetland could be called a swamp was a function of the beholder. Because I could walk through it, going from high clump of grass to high clump of grass, without getting wet, I didn't initially refer to it as a swamp. However, Len Marino called it "The Swamp" and I came to agree with him.

As true for the pond site, the water table was within a foot of the swamp surface year round, dictating the type of vegetation and wildlife that would thrive there. Swamp maple grew well throughout the area, with pine and birch, and alder scattered here and

there at isolated high spots. And everywhere, sphagnum moss was prolific to the delight of my mother who liked to use it in terrariums.

Len, being a lover of swamps, felt it would be a shame to timber that area and change the character of The Swamp. He appreciated the fact that swamps have their own ecosystem, and I too came to appreciate that. Thus I became The Swamp Protector and refrained from planning more disturbances there.

A brook starts at the pond and meanders through The Swamp. It became known as Turtle Brook because one day when I picked up a rock there, the rock moved and transformed itself into a turtle, startling me and hence naming the brook. Turtle Brook flows year round, even in the driest of seasons. Before joining Mill Brook, this much smaller brook leaves The Swamp and meanders around Love Hill, finally entering another swampy area where beavers used to have a pond. They are gone now, but will probably dam the area again some day when they decide the time is right.

Inside the horseshoe formed by the large esker is another swamp, perhaps five acres in size, very similar in appearance to the one on the south side of Big Pond. The esker's swamp is my favorite swamp in the world. The esker surrounds most of that swamp, giving it an isolation that both the wildlife and I appreciate.

From what I learned about the land at the pond site, I assume that the esker's swamp also has a few feet of black muck underlain with gravel having few rocks greater than one foot in diameter. The esker swamp has Read Brook flowing through its center just as Turtle Brook flows through The Swamp. Read Brook and Turtle Brook join together as they enter Mill Brook, almost doubling its size. To my eyes, the enhanced Mill Brook seems to be improved. The water, flowing a little faster, tolerates less sediment producing a rocky bottom with occasional sandy pools.

THE TREE HARVESTS

Why Have Tree Harvests

During the first few years of forest ownership, I became increasingly aware of the condition of the woods. I learned to see that the woods were overgrown with poor quality trees, mainly balsam firs, because prior logging had raped the woods. The engineer saw the problem, and of course felt compelled to try to fix it. Fixing it required thinning the poorer quality trees so the remaining trees could better reach their potential. It took only a weekend of trying to thin a small area to realize it was much too vast a job for me. *The only practical way to speed the healing of the woods was to have the woods harvested – selective thinning to emphasize the positive.*

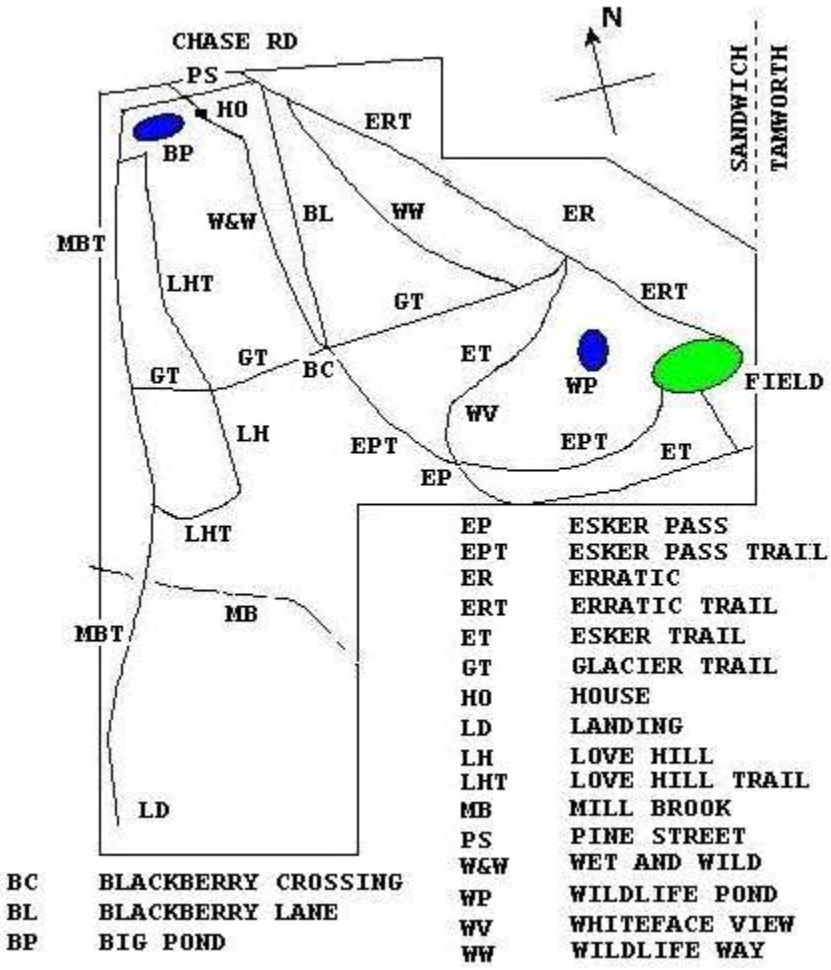
And that brings us to roads. Roads make it easier for logging, allowing access for trucks to haul away the logs. With woods roads leading to a staging area, logging operations become more efficient than if trees need to be dragged longer distances to an existing roadside landing. If woods have high quality timber, exceptions might be made to drag timber substantial distances, but the logger might also use some of the prospective proceeds to upgrade the road system, benefiting both the landowner and the logger.

But our land did not have high enough quality timber to entice a logger to make a substantial road building effort. It appeared the onus was on me to make the logging road construction appear to be as easy as possible. My approach was to choose prospective sites for a few future logging roads, establish trails along the proposed routes, and have a logger be suitably impressed to commit to a tree harvest.

With hindsight, that was incredibly naïve. Wouldn't a professional logger have much better insight into where the logging roads should go? But since none were coming forward with timbering contracts, I saw no other choice. It was not in my nature to just give up.

Before giving a brief description of this only partially successful endeavor, it will be helpful to have a map of the area. The following map shows locations as of 1999.

Map of Trail System



Glacier Trail

My plan was to have logging access from Chase Road, close to the western boundary. It would pass through a wet area and join Mill Brook Trail, an old logging road. After following Mill Brook Trail for a couple hundred yards, the logging route would head east with the goal of eventually joining Erratic Trail.

I named the proposed east-west route Glacier Trail in honor of the glaciers that shaped this land. The first 300 feet from Mill Brook Trail ran through high dry land with beautiful woods of tall, nicely spaced pine trees. The moss covered ground invited picnics. The area reminded me of a Japanese Tea Garden I saw in San Francisco and I thought some day I might groom it into my own Japanese Tea Garden!

Further east, the land remained flat and dry, but the thicker woods made the trail harder to establish. Beyond that area was a small stream, later christened Turtle Brook, that flowed out of a large wetland with a fair number of good size trees. Such a treed swamp is usually the result of nature evolving the landscape. More than ten thousand years ago a glacier scraped out a low area which filled with water and became a shallow pond. The pond was a great habitat for weeds, and over thousands of years decaying weeds filled in the pond, creating rich mud and eventually a swamp. By the time I visited

this area, the swamp had further evolved, having some dry areas that allowed trees to establish themselves

A treed swamp is a great place for flora and fauna, but a lousy place for a road. Most of this wetland could be avoided by going on the southerly edge of the lowland, and I constructed a nice trail there, with the hope it would eventually be upgraded for a logging trail. But a hundred foot problematic area could not be avoided. Road construction through there would require gravel fill and a permit. I settled on a temporary trail that would encourage the hiker to hop from dry spot to dry spot.

The rudimentary trail finally reached dry ground at what has become known as Blackberry Crossing. Since my route from Mill Brook Trail to Blackberry crossing was currently impractical for a logging route, I searched for another way to access Blackberry Crossing. Two years after starting my proposed logging route I was starting over!

Wet and Wild

I decided to make the access road further east along Chase Road, where higher elevation helps to solve the wetness problem. It was named Main Street, hopefully my main street for timbering. I eventually changed the name to Wet and Wild when I realized the true nature of the trail! It was fine trail for light footed humans, but upgrading it for heavy logging trucks was too daunting a task for a logger to consider. Another year in the swamp with nothing much to show for it!

Many more years passed before I could convince a logger that a profit could be made by logging our land. During that time I came to realize that any section of the woods I selected for timbering should be relatively dry. Why turn off a logger by showing him trees of relatively poor quality AND wet terrain? The land that could be accessed by Erratic Trail met the criteria of dry terrain. But I still needed to find a logger who could make a profit with poorer quality trees. That had to wait for a technological advance which made it economically feasible to harvest woods of marginal quality. It's fitting that the engineer was finally saved by technology!

Biomass – A New Era

During a visit in 1983, Dave Weathers gave me some exciting news that seemed too good to be true. S. D. Warren Paper Company, located in Westbrook, Maine about 65 miles from us, had installed a power generating wood furnace with an almost insatiable appetite for wood chips. They might be interested in timbering our land. I could contact Jack Wadsworth, a forester for S. D. Warren, for further information.

I contacted both Jack and also Peter Pohl, the County Forester. Jack scheduled a visit in November, and Peter responded as follows:

Since this summer, timber harvesting has been revolutionized with the arrival of whole tree chipping. As Jack probably explained, this new technique provides for total tree utilization. Diameter size is not a limiting factor. Trees as small as 1-2" are clipped and chipped. The only major restraint is the topography. Excessively steep and rocky terrain and/or wet, swampy areas are not suited for the armada of equipment needed.

I am very impressed with the work that has been done on a selective basis. The aesthetic appearance of the area harvested is much more appealing. Very little slash remains. Wood lots that formerly were not feasible to thin commercially are now operable.

Fred Bickford, a local logging contractor, has purchased this equipment and is doing an amazing job thinning small diameter, marginal wood lots. He has a

considerable backlog of work so that there might be a waiting period of a year or more.

I feel confident Jack Wadsworth will follow through on your project if you desire to initiate one. If I can be of any assistance feel free to contact me.

Jack came in November, walking much of the land this side of Mill Brook with Julie and me. He was favorably impressed and thought Fred Bickford, a local logger, would want to take it on. He thought it might be harvested the next summer, starting with a forty acre parcel.

Julie and I liked Jack Wadsworth and the company he represented. Because S. D. Warren's furnaces would demand a huge supply of wood chips for the foreseeable future, the company seemed to bend over backwards to have good public relations. Jack told us to consider him our forester even though S. D. Warren paid his salary. The company felt that good forestry practices would benefit both S. D. Warren and the landowners.

Peter Pohl had used his crystal ball very accurately the previous year when he wrote to us that

The increased demands placed upon woodlands and improvement in utilization make marginal wood lots commercially more attractive. I have little doubt that in the next 5-10 years your acreage will also be more appealing.

It seemed as if that forecasted time had arrived.

Peter's position as county forester had given him insight into how the times were changing. Sometimes I felt like a rejected bachelor who would forever remain a wallflower as I tried to interest loggers in our land, having been rejected by Scott Aspinall and Brian Cutter. After walking the land with me, each said some encouraging words and held out the hope that someone might be interested in logging the land, but never got back to me, evidently having concluded that the land was marginal and not ready for harvesting.

But now that we had a logging proposal, hindsight told us that Peter had obviously been right: changing times and/or maturing trees would eventually bring us a timber harvest. It was a momentous occasion. Modern technology would help reclaim our woods from their neglected condition. I could hardly wait.

But with the excitement came some trepidation. Even with modern tree harvesting techniques, much debris would be left, not just at the site where the chipper would be set up, but throughout the woods. I didn't know how long it would take for the woods to recover. But from what I had learned during my ongoing education, I felt confident that the woods would eventually be healthier and more beautiful. If left alone, the thickets of balsam fir could take another 50 years to kill each other off, shading higher quality trees from sunlight, leaving them permanently scarred. Without intervention, I guessed it might take more than a hundred years for the forest to recover and live up to its potential. I wouldn't be around by then to appreciate nature's healing and a lot of wildlife would have missed the chance to live in the improved habitat.

Jack said he would arrange to have us join the S. D. Warren Tree Farm Family, an organization of people who provide the company with forestry products. (This is not the American Tree Farm System that I hoped we would be able to join some day when we meet their rigorous requirements).

Jack Wadsworth stated that he was our forester, rather than the paper company's. But we were aware that he was not what most people would refer to as a consulting forester: an individual paid by the landowner, independent of any business. Since Jack's salary was paid by S. D. Warren Company, we would save money, but that came with a potential conflict of interest. However, because both Jack and Fred Bickford came highly

recommended, it seemed as if it would be a good arrangement for all. And it did turn out to be that way.

The First Tree Harvest

From 1984 to 1989 four tree harvests took place on our land. All of the harvests were done by Fred Bickford and his men. Most of the land was on the north side of Mill Brook, close to 100 acres, was thinned. I find the details of the individual harvests fascinating, but I doubt many readers share my enthusiasm. Hopefully the first harvest will be found to be quite interesting because of its novelty. That harvest is described in some detail, but the following harvests are given a more broad-brushed approach.

Prior to the first tree harvest, Jack Wadsworth and I walked the land and did some marking. Orange spray paint marked the trees that should be cut and blue those that should be saved. When an area had few trees that were worth saving, Jack would only use the blue paint, knowing that Fred's men would realize that any non marked tree in those areas was fair game.

Jack brought his dog Judy, a large black lab in great shape, as was her master. They stomped through more than a foot of snow without seeming to tire, but I was often content just to stand in one spot watching Jack mark trees in the vicinity.

Jack helped me further my Tree Farm education, teaching me that deformed, densely packed, or poor specimen trees should be removed as well as showing me what should be saved. I had fun trying to use that knowledge to guess which trees he would select for cutting. If he marked a tree I thought should be saved, I'd find out his reasons for choosing the tree and thus continue my on-site education.

In mid January 1984 the harvesting began. Dad, Uncle Everett, and I came up to observe the whole tree chipping. At first, the noise and confusion was overwhelming. The sensory overload made it difficult to understand what was going on. After a while, I came to understand that there were different types of machines participating in the melee: feller-bunchers, skidders, and a whole tree chipper.

The three feller-bunchers felled the trees and bunched them up so they could be dragged away by grapple skidders – very large tractors with tongs on the back for grasping the bunches of trees. The trees were dragged to the wood chipper that was making as much noise as all the other machines combined. After observing the commotion for a while, I realized that what at first seemed like chaos and random motion was actually quite organized. Each operator was not only very efficient at his individual task, but also very good at coordinating with the others.

Of all the machinery present, I found the feller-bunchers the most novel and fascinating. There were two 4-wheel vehicles and one 3-wheeler[4]. The 4-wheelers were each thirteen tons and the three wheeler nine tons. The tires were massive – five feet in diameter. Each feller-buncher had two sets of chains weighing 500 lb.! Instead of a saw, the feller-buncher used hydraulic shears to fell the trees. The immensely powerful shears could fell up to fourteen inch diameter trees. Unbelievable!

In addition to the shears, the feller-buncher had two arms. The right arm (with two fingers) wrapped around the tree, supporting it while it was being sheared. Then the left arm briefly let go of its accumulated trees (giving it the name of accumulator), and wrapped around the new tree in the right arm, freeing the right arm to help cut another tree.

[4] Three-wheelers are no longer used because they are more prone to roll-overs.

After the trees were felled and neatly piled by the feller-buncher, they were dragged away by skidders which took them to the wood chipper. A skidder is large like the feller-buncher: it has four 5 ft wheels and lots of power, but has a blade in front for pushing and a winch in the back for pulling.

The wood chipper was impressive, able to keep up with everything that was sheared and dragged to it. Sitting up in a cab that rotated 360 degrees, the operator picked up logs by maneuvering a jointed fifteen foot long boom with icetong-like claws. Toothed rollers then drew the trees into the blades for chipping. The boom could pick up three ten inch diameter trees and push them between the toothed rollers which drew the trees in with no further operator assistance. So the operator was free to use the boom to grasp more trees, having them ready to thrust between the rollers when the previous trees were eaten up.

My initial sense of being overwhelmed and disoriented was heightened by my realization that the woods looked so different from what I remembered. There was so much open space. Some of my trails, having lost their defining tree borders, actually seemed to have disappeared.

After observing the process for about an hour, I was able to rationally assess what was happening to the woods. In general, I was very happy. However, I felt that more hardwood was being removed than I desired, due to poor communication about what I had considered a junk tree. Having few good hardwood trees in that area, I considered a well-formed red maple to be desirable and wanted such trees left for future growth. But to the loggers, red maples were junk trees. Once I asked them to leave the red maples, they were more than happy to comply.

We were fortunate to have Jack Wadsworth as our forester and Fred Bickford as the logger, both men who cared about the woods and cared about making people happy. And a happy landowner is one whose woods are improved by the forest harvest. I was very happy.

I remembered Peter Pohl saying what a shame it was to lose a high quality traditional logger like Fred Bickford when he went into biomass operations. Fred certainly had changed the emphasis of his work. But his prior expertise still came into play when quality trees were cut to create drag routes for the skidders or when one good quality tree had to be cut to enhance the environment for an even better one, or a mature tree to make room for promising youngsters. So Fred still was in the logging business, but with a definite emphasis on biomass wood chipping. I thought his mechanized equipment presented an even greater opportunity for improving the woods.

After the Tree Harvest

When the forestry operation was finished, forty acres had been timbered. And although the main thrust of the operation was to chip the inferior trees, saw logs and pulpwood were also harvested. The wood chips weighed almost ten times as much as the logs, but the value of the logs was almost half of the $3500 proceeds from the sale. At ninety cents per ton, selling wood chips didn't make me rich. But having the junk trees removed, allowing the forest to improve over time, made the project very worthwhile to me.

It was a shock when I first saw the land after logging. I didn't realize how much the trees had become a part of my memory. It was disorienting to see lots of open space where dense forest had been, even though I realized that the forest had a much better

future. But it didn't seem "right" at first. These were not the woods of my memory. But three months later most areas looked "normal" to me again and I knew that these were the woods as they must be if they were to become healthier.

After the logging, I spent months making the woods look more acceptable to me. I cut small trees that were left leaning from either having equipment run into them or trees falling against them. Fred Bickford's men were careful in their work, shearing trees and putting them down "gently" to minimize damaging the trees. But with such large and powerful equipment, it was impossible to avoid sometimes damaging the innocent bystanders.

When I had finished beautifying the woods by removing the leaners, I started cleaning up our trail system. The trail rejuvenation usually consisted in the simple but time consuming task of removing the large amount of debris left on the trails. But some trails were so changed that it didn't make sense to reestablish them. I even changed one section of Erratic Trail so that it followed a "drag road" created during the timbering. Due to the natural tendency of the loggers to drag over the easiest route, they had inadvertently suggested an improved path for part of Erratic Trail.

Other Tree Harvests

Because of weather conditions, the second tree harvest was more problematic than the first. The first start date was scrubbed because an early snow prevented the ground from freezing in the wet areas. That implied the heavy equipment would certainly make a muddy mess and perhaps get stuck in the process. Fred was not able to fit us into his schedule again until the following October and by then we were into another wet spell! Harvesting was attempted, but had to be discontinued because of the poor conditions. Finally, January arrived with little snow and cold weather, presenting ideal conditions for the heavy equipment. Once started, this tree harvest did not differ materially from the first.

Benefiting from my prior experiences with tree harvests, I was able to get extra benefits from the final two. Instead of letting Fred's men choose where all the drag routes went, I specified some of their locations. As a result, my trail/road system expanded.

The eastern section of Glacier Trail was created as well part of Esker Pass Trail. Dragging bundles of trees along these routes created the semblance of a road, which worked well for vehicles as long as they had 5 foot diameter wheels! My woods pickup truck did not meet that criteria, but I eventually purchased a backhoe and was able further upgrade these trails/roads. On the other hand, Blackberry Lane was in excellent shape after the tree harvests ended. It has been used by logging trucks and thus Fred's crew used a bulldozer to remove tree stumps and smooth it out.

Another fringe benefit of these tree harvests was that I was able to have some limited clearcuts. No, I didn't sell out my principals and clear cut a large area to increase my income from the tree harvest – at 90 cents per ton money was certainly not the motive. One site was for a new house Julie and I wanted to build for a house by our recently constructed pond (see *Dick and Julie's New Home*). Another small clear cut was for a pond near the esker. This, our second pond, (see *Wildlife Pond*) recreated part of natural pond that had filled in over the eons.

Tree Harvest Memories

Even though I have decided to give only a detail account of the first tree harvest, I have some specific memories from the other harvests I would like to share.

Ken, one of Fred's dozer drivers, reminisced about his days working on the feller-bunchers, telling me they could easily turn over and that he had turned them over three times. The time of maximum danger would be when the machine had one tire on soft ground and was holding a big tree. The tire would settle into the soft ground which would cause the held tree to vary from vertical. This would in turn place more weight onto the problem tire, causing more of a rotation. In engineering parlance this is a positive feedback system, which can become more and more unstable. If the operator is unable to drop the tree quickly, over the feller-buncher goes. That's why all the operators wear seat belts. And when you consider the torque that is generated by holding a good size tree at an angle, its amazing the feller-bunchers don't tip over more often.

I never witnessed a feller-buncher turn over, but I saw one stuck in the mud. John was relatively new at the game and hadn't learned to be properly respectful of muddy areas.. In mid afternoon he was working too close to a wet area and slipped in when cutting a tree, getting stuck. Soon his five foot wheels were almost out of sight. I borrowed a steel cable from Bill Read so that another feller-buncher could try to pull John out, but it wasn't able to extricate him from the bog! John had to quit for the day until a skidder could be brought over from another job.

John, Milton, and another worker came back at 6:30 PM, in the dark, with a skidder. But the cable on the winch kept breaking and they couldn't pull the feller-buncher out either –. Finally by using both the skidder and Milton's feller-buncher they were able to pull out John's machine which was using its horsepower as well to help. As the three machines went lumbering down the trail by moonlight, it looked like a parade of dinosaurs.

John came at 3 A.M. on Tuesday morning because he wanted to work his normal number of hours even though he had to take part of the morning off. I went out at four to see what it was like to timber at night. He had headlights on and the moon was full so it wasn't too difficult to see. I watched for a half hour without John noticing me. From a minute by minute perspective, progress seemed very slow. Similar to watching someone wallpaper a room. It seems to take forever, but then a half hour later you realize a lot has been accomplished When he stopped with another broken hose, I made my presence known. Then John went off for the hose and I went back to bed.

I came back at 6 A.M. to find that he had done some more cutting, but like Winnie the Pooh, he was stuck again. In the darkness, he had become disoriented and got too close to the mud again! John left then to do his personal business and said he'd be back about noon. When he came back, we both used our chainsaws to cut wood to push under the wheels, a process much like building the corduroy road with Bill Read during the digging of the drainage ditch at the pond. The wood helped John make some progress towards dry ground, but then a large rock got wedged between the wheels and stopped any further progress. He walked to the gravel site and brought back the skidder for reinforcements.

That was my big opportunity. John needed someone to handle the feller-buncher while he pulled with the skidder. He warned me that the machine might feel as if it would tip over, but not to worry. I made sure both doors were shut securely and put on a seat belt. The skidder pulled and I applied the gas to the feller-buncher. It slowly moved over the rock and out of the mud. I was so excited I almost forgot to take my foot off the gas, but luckily I stopped before hitting the skidder.

Winter is for Logging

I strongly believe that winter time is the best time to log. Of course, logging equipment is so expensive that it must be utilized year round. But if your land is as wet as this, it's best to have timbering done in the winter.

From my standpoint, the main advantage of winter timbering is that heavy equipment doesn't do as much damage to the frozen land – logging roads in the woods don't become rutted. Another advantage of logging in the winter time is that the tree's bark is much tougher and less likely to incur damage from inadvertent bumping of trees that were not selected for cutting.

Of course there are disadvantages to timbering in the winter. On land that has a fair amount of wet areas, a major problem is remembering what areas to avoid because a blanket of snow can do a very effective job of disguising problem areas. It's often possible to use the tree species as a guide to the wetness of the region, but it doesn't take very many mistakes before the loggers decide it's not worth the risk and reduce the scope of their harvest.

If a tree harvest is scheduled for an area that has wet spots, it is important to plan the drag routes carefully. Because the landowner is usually more familiar with the land than the loggers, he can spend time planning the drag routes before there is snow on the ground. But on the other hand, the loggers will have had much more experience than the landowner in choosing drag routes because it is part of their daily work, so they may want to modify the selected routes. I found that their modifications usually made a lot of sense – especially from their viewpoint that time is money and the best route is the fastest one. But sometimes a shorter route might lead them into a wet area where they would become stuck and discouraged, or not fit in with long term plans for the our road system. So I found it advantageous to be available for consultation whenever possible. And I found it great on-the-job training for how to plan my own trail and road system.

No More Tree Harvests

After these tree harvests, the woods on the north side of Mill Brook were amply thinned , and the woods on the other side of Mill Brook could not be accessed by logging equipment until Mill Brook Trail was improved. Before that could happen, my life took a detour and I encountered an unexpected divorce - more on that later.

The American Tree Farm System

In 1984, well before the last tree harvest, our woods became eligible to be called a "Tree Farm". We were inducted into the American Tree Farm System at a picnic sponsored by the S. D. Warren paper company. Later we received the following welcoming letter:

September 6, 1984
American Forest Institute
1619 Mass Ave, N.W.
Washington, DC 20036

Dear Tree Farmer:

Congratulations and welcome! Congratulations on having your property certified as a Tree Farm and welcome to the growing number of forest-land-owners who comprise

the membership of the American Tree Farm System. We are pleased to enclose your certificate of membership and hope you will display it with pride.

As a member of the American Tree Farm System, you are now entitled to display the nationally known green and white Tree Farm sign signifying your forest is being managed in accordance with forest management standards set forth by both the national and state sponsors of the program. The forester who inspected your property will contact you soon to deliver the Tree Farm sign. If you do not hear from him within two weeks, we suggest you contact him directly.

You will also begin to receive periodic mailings of The American Tree Farmer magazine, a publication designed to keep you informed on regional and national developments in forestry and conservation matters, and other publications we feel will be of interest to you. If you have items or information of interest to other Tree Farmers, we would be pleased to hear from you.

Again, congratulations and if we can be of assistance please do not hesitate to call on us.

Lester A. DeCoster
Vice President, Resources Division.

The main purpose of the American Tree Farm System is to encourage forest owners to manage their woods for timber production in a manner analogous to managing an agricultural farm. On a Tree Farm the crop is timber, not wheat or corn or livestock and the time it takes to grow the crop on a Tree Farm is longer, but the principle of growing the crop is the same.

The American Tree Farm System recognizes that well managed forests have many benefits other than the lumber they produce. They provide wildlife habitat, are essential to clean water supplies, etc. Thus Tree Farm members are encouraged not to focus just on economic gain, but to work as a partner with nature.

In 1941 the first Registered Tree Farm was designated. By 1984 there were about 50,000 Registered Tree Farms covering more that 80 million acres in total. In New Hampshire there were over 1000 Tree Farms. It was a good feeling to be part of an organization that cared about the land and was large enough to make an significant impact.

Not everyone shares my view that Tree Farms help improve the environment. Some people feel that the world would be better off if forests were left alone to manage themselves. Following their logic to the extreme, the world environment would be so much better off if there were no people here to change it. But that isn't a viable solution. The number of people on earth continues to grow, not diminish.

Needless to say, overpopulation has reduced the quality of forests, transformed forests to deserts, polluted water, and made animal and plant species extinct. But leaving forests unmanaged won't solve the problems of environmental atrophy caused by humans. That would be counter productive because trees are a renewable resource, unlike oil and coal.

Sometimes large tracts of forest are clearcut for immediate financial gain at the expense of the environment or intensively cut to optimize profit at the expense of wildlife. But I believe that as time passes, these practices are becoming the exception, not the general rule. *A major purpose of this book is to spread the word that Tree Farming helps to solve environmental problems as well as offering a satisfying way of living in harmony*

with nature. And in keeping with the changing times, today Tree Farming emphasizes improvement of the environment more than possible financial rewards.

TREE TENDING

I felt an obligation to personally contribute to the forest improvement begun with the tree harvests. The woods were in poor shape because of prior timbering practices that stressed financial gain over forest improvement. My timber harvests focused on removing the poorer trees to encourage higher quality trees to be all they could be. But in areas where the woods were thinned substantially, stands of over crowded balsam fir would sprout up again if left to nature. So to continue improving the forest, I planted thousands of seedlings, thinned around nature's seedlings, and pruned trees to enhance their beauty and improve the quality of their lumber. This chapter describes some of my attempts at influencing the development of the forest.

The process of working in the woods to improve timber production is called Timber Stand Improvement, or TSI for short. Though some may question whether thinning of junk trees with a biomass harvest deserves the title of TSI, for the purpose of this book TSI is any forestry work the landowner believes will improve the conditions of the woods.

The Red Pine Plantations

A plantation is a grove of trees predominantly of one species. We have two different red pine plantations on our land, one near the Rock Playground and another along Mill Brook Trail before Glacier Trail. They were planted in the 1950s to rejuvenate the area after gravel removal that helped upgrade Route 113A from a dirt to a paved road.

Red pines are not nearly as desirable as white pines from a commercial standpoint, but I like them for aesthetic reasons. Because a lot of my motivation on the Tree Farm comes from improving looks, not making money, I decided to work to make the red pine areas into special groves. Years later I was surprised to learn that red pines had become more valuable because they produce tall straight poles. But that didn't matter to me, because by that time I had promised the red pines a long and happy life.

My first approach to aiding the red pines was using my chainsaw to cut down other invading species. Gray birch were the worst culprits, crowding the outermost rows where they caught the sunlight, shading the red pines that were close to them. After three years of selective thinning, the red pine had responded admirably to their stronger dose of sunshine and looked healthy and well shaped, motivating me to pay even more attention to those pines in the future.

In the winter of 1985, after the competing trees were removed, I started pruning the red pines. With a handsaw, I pruned the dead branches to a height of seven feet, as high as I could comfortably reach. Winter is a great time to prune trees. It's good exercise, gets me out into the bug free woods, and the deep snow boosts me higher up the trees for pruning.

I am proudest of how the pruning has made our red pine plantations look, but have actually spent much more time pruning white pines. With white pines, there are two motivating reasons for pruning: aesthetics and economics. While aesthetics are the same for the white and red pines, economics are very different. Knot free white pine is worth almost twice as much as knotty pine. By using a pruning pole to saw off lower branches,

you can yield up to sixteen feet of superior quality wood. Economic reasons started me pruning white pines, but as I bonded with the trees, aesthetic motivation kept me going.

White Pines

Of the various tree species on the property, white pines are my favorite. In colonial times it was not unusual to see white pines 200 feet tall and six feet in diameter. While there are no such giants on this property anymore, there are many three feet in diameter and close to 100 feet tall.

During the tree harvests that occurred, the only white pines that were allowed to be felled were diseased ones or a few that were in the way of a woods road. Plus some were cut because they were in a house site. I am encouraging the remaining whites pines to attain their future glory, even though they will not be able to reach their potential in my lifetime. At the time of publication there are perhaps 500 white pines that are over a foot in diameter. I may have overlooked a few, but the vast majority has had their branches pruned to encourage knot-free wood.

At first I found that removing just the dead limbs from white pines was more than enough to keep me busy. But as years went by, I ran out of dead limbs to remove and transitioned to pruning live limbs. But to avoid sapping the vigor of the tree, I restrained myself to cutting only one year's growth, or one whorl, of branches from the tree. But I was not then as careful as I am now when I prune. For the first couple of years I removed the limbs with an ax instead of a pruning saw because the ax was faster and did almost as neat a job. But over a period of time I found out that attacking a white pine with an ax traumatizes the tree. Pine sap weeps from the pruning location for years, and the tree takes much longer to cover the short stub that is left. Red pines don't seem traumatized as white pines if you prune them with an ax, but a pruning saw allows you to cut the limb much closer to the tree.

Over the years, I honed my pruning skills even more. At first I pruned the branches of a white pine close to the trunk so there would be a smaller stub for the tree to cover up as it grew. But I learned that pruning close to the trunk can cause tears to the surrounding bark leaving a wound near the junction that can bleed sap for a number of years. So I now prune more than a quarter of an inch away from the trunk to minimize the odds of creating a wound in the bark.

My pruning activates go back a long way. When I was ten years old, I took on the responsibility of pruning the family's forsythia bush and learned that when one shoot is pruned, it causes more shoots to grow out making the bush fuller and more attractive. And because the changes take a while to occur, pruning taught me the joys of delayed gratification. As a tree farmer, I am still very much into delayed gratification.

Similarly, just being outside and communing with nature during the pruning process is feels good. There can be even an olfactory reward. When the dead limbs are pruned from a white pine, a 'piney' smell is produced like that of cut two by fours. Pruning red pine produces its own distinct and very pleasant smell, considerably sweeter than white pine. The more intimate one becomes with nature, the more one is rewarded.

Planting White Pines

Part of my long term strategy when I started harvesting trees was to reforest areas that were excessively thinned during tree harvests. In early 1985 I started fulfilling that commitment, ordering a thousand white pines from the New Hampshire state nursery for ten cents per tree, a very good deal. The trees arrived in early May. Most years it would

be ideal to have the trees arrive in May, but not this year. We were in the middle of a spring heat wave with temperatures in the low 80s, certainly not an optimum temperature for the seedlings or the planters.

I made use of a planting spade and a mattock when planting the trees. The blade of the spade was smaller than the average shovel making it would less likely to hit rocks when digging. The mattock looks like a pick on one end, with the other a flat blade 3 inches by 1/8" which digs narrow slits for inserting seedlings into the ground.

Most of the white pines were planted south of the Rock Playground in an area that had undergone the severest thinning of the tree harvest. Julie and I, with her mother, planted seedlings for two days. While it was hard work, especially for our backs, it was very rewarding. And though Mom Pineo is no longer with us, more than a decade later I remember her when I walk by that planting site. Planting trees for posterity is much nicer than planting a tombstone.

That summer we had a drought. The drought, along with our inexperience as seedling planters, gave the poor white pines only a one third survival rate. I was getting some sad insights into what it was like to be a farmer at the mercy of the weather. You win a few and lose a few. But I hoped that practice and better luck would give better results in the future because I planned to follow the tree harvests with reforesting plantings.

Me and My Brush Cutter

In the fall of 1985 I bought a brush cutter, a machine I had previously thought was, like a chainsaw, a great time saver, but very dangerous. I was pleasantly surprised to find out that the brush cutter is much safer than a chainsaw. The brush cutter is designed with the rotating saw blade at the end of a long pole. When the operator straps on the cutter's harness, the blade is forced away from him. Objects thrown by the blade are the major hazard.

The harness clips onto the brush cutter at its center of gravity so that the cutter head at one end of the shaft is balanced by the motor at the other end. The weight of the brush cutter is transferred to the shoulders, leaving the hands with nothing to do but control the swath of the brush cutter.

And therein lies a major danger. In concentrating on cutting brush, swinging the cutter back and forth, cutting brush hundreds of times faster than if using hand loppers, you could inadvertently cut the leg off an innocent bystander. Warn any bystanders to stay well away from your lethal weapon.

The brush cutter revolutionized how I maintained trails. I used to get down on my hands and knees and use pruning clippers to remove small diameter saplings in my earliest trail making days. Then I progressed to using long handled loppers, which allowed me to remove small trees by bending over, but not kneeling. An improvement, but oh my aching back!

Now I can use my brush cutter standing up, its 20 lbs. of weight transferred to my shoulders by the harness. I can cut larger diameter saplings, not get a sore back, and do the job much more quickly. In fact, one time I even improved the condition of a sore back by using the brush cutter, even though Julie was not amused and thought I was not being smart to do that. But the twisting motion actually limbered me up and I was certainly no worse for wear after finishing that exercise session.

Because balsam fir loves to reseed in sunny places, it sprouts up in our trails. With the brush cutter I can walk forward at a slow but steady pace, swinging the blade from side to side, and cut the new growth from a half mile of trail in less than an hour! A tractor with a brush hog would be even faster, but I can't justify the huge expense for any additional timesavings it would obtain.

The brush cutter also is also useful for thinning around seedlings, whether planted by me or Mother Nature. This land is so productive that unwanted plants crowd in, competing for sunlight.

The Genesis of a Nursery

I had a vegetable garden for a number of years at our Kingston house. The first year we lived there I spent many hours turning the soil over and removing what seemed to be an endless supply of rocks. But the vegetable production that year was disappointing, so in the fall we spread lots of horse manure.

The second year the garden responded to the fertilizer and the crops were a lot more lush, but we got even fewer vegetables, most of the harvest being reaped by a woodchuck. The third year I fenced the garden, burying the bottom of the wire to prevent the woodchuck from burrowing in. That seemed to work, and the small plants were left untouched. But when July came and the first beans were ripening, the woodchuck was motivated enough to tunnel under the fence and feast.

I decided to change the rules of the game before I lost the entire war, planting what woodchucks would not be interested in, trees. I started planting Sandwich trees while I was in Kingston. My nursery was a twenty foot square area, certainly not very large, but it could still support many seedlings. After these trees had time to respond to their pampered life, they were eventually moved to Sandwich. They were especially helpful when I reforested a gravel site (see *Gravel Excavation*).

Tree Planting via Bob Behr

In 1987 I decided to reforest some of land in the southeast quadrant of the Tree Farm which had been thinned during tree harvesting. This dry section of land was within the esker's horseshoe near the town border. It was a five acre section, about half of which I wanted to replant.

I contacted Peter Pohl who suggested that covering that much area would require about 4000 seedlings. From my past experience, I knew that planting that many trees was above my limitations of time and endurance. Peter told me it wouldn't cost very much to hire someone to do the planting at a rate of about twelve cents per tree. He told me that cost sharing by the government could cover two thirds of that amount and planting 4000 seedlings could cost me less than $200, an unbelievable bargain.

I called Bob Behr, the planter recommended by Peter Pohl, and he came over to inspect the tree planting sites at the end of March. Bob said he charged ten cents per tree, unless the planting was difficult. I told him that was a very fair price and to charge more if planting conditions merited it, and we had an agreement.

The trees arrived the end of April, and Bob picked them up for me, which saved me an unplanned trip to the farm. He stored them in our barn, where they would stay cool, until he could start planting. Planting the seedlings began on May 2. Bob used a hoedad instead of a mattock to plant the trees. The hoedad was lighter than a mattock with a thinner blade, designed specifically for tree planting and the tool of choice for professional tree planters. Bob dug with the hoedad in his left hand, took a tree from his waterproof

apron with his right hand, planted the tree in the hole, and stomped the opening shut. Periodically he added some water to his apron to keep the roots moist. The trees were planted one to two inches lower than we had done and Bob explained that was because the top layer of soil was "duff" (fine organic debris) not dirt.

Bob told us he had about a 75% success rate, dramatically higher than our one third survival rate for the 1000 white pines we had planted. The hot weather at planting time was partially responsible for our low survival rate, but our trees should have done better. Planting the seedlings lower was a good tip from Bob.

On his first day Bob planted 500 trees in five hours. At the end of the day we walked around various sites that needed planting and I gave him a map with my estimates of the number of trees needed for each site. Then I did some planting of my own, planting 50 trees near Blackberry Crossing using a mattock. The 50 took me a little over an hour, helping me to appreciate Bob's work even more.

By the beginning of June Bob had planted 3000 of the white pines, not as many as I had anticipated, his springtime duties at his farm limiting his spare time for tree planting. But it was certainly more than I could have done on my own. The remaining 1000 seedlings he heeled in on the north side of the barn, digging an eight inch wide trench, putting the seedlings in, and covering the roots with topsoil. The location kept the seedlings out of harsh sun, and rainwater from the roof gave them extra moisture. That helped them survive until fall, when I planted some on the hill behind the barn, a futile planting effort on my part because of a future construction project.

Over the years I came to appreciate how prolifically trees regenerated on this land. In most spots, it was just as productive to thin around the best naturally regenerated trees as to plant purchased seedlings. The harvesting increased the rate of natural regeneration. The openings allowed sun to reach the forest floor and the scraped soil encouraged the fallen tree seeds to sprout and flourish. But the species that reseeds itself in any given year is somewhat up to Nature’s lottery. For example, to conserve energy, white pines produce seeds only every third year or so. Thus to encourage a specific species it is often necessary to plant seedlings and/or thin natural seedlings.

The Briar Patch

In mid July 1988 I wanted to trim around the trees that Bob Behr had planted in the spring of the previous year, but they were very hard to find because blackberry bushes were fast taking over the area. I should have planted the area soon after the biomass clearing instead of waiting for a few years and letting the brambles take hold. I postponed trimming in that area until fall when the leaves would be gone and the baby trees much easier to see.

My encounter with the blackberries led me to consider why they had flourished recently. When I first bought the land, there were almost no blackberries because the woods were too shady. For a couple years after the first tree harvest, blackberry bushes were still few and far between in our woods. I remember Pat Read asking if we were getting invaded by briars the second year after the timbering, and I told her there was no problem. Well, by 1987 that was no longer true. In year three the blackberry bushes reached critical mass and reproduced prolifically. There were also a few raspberry bushes. The rapid spread of the bushes came about because birds and bears ate the berries and scattered the seeds in their droppings. Many of these seeds found homes in sunny areas

that were created by tree harvest. These plants produced more berries which produced more bushes, resulting in exponential growth for a while.

There are good points and bad points to having a briar patch. On the plus side, birds and bears like them both for food and shelter, so blackberries certainly attract wildlife. And lots of people enjoy eating the berries too. Besides providing food, the briar patches provide just the right amount of shade for young trees, aiding their growth. The shade helps in moisture retention when the young trees have a small root system. And white pine seedlings especially appreciate the shade of the briar patch that protects them from loosing their lead shoot by the phototropic white pine weevil. This inconsiderate insect lays its eggs on the topmost shoot of a white pine, locating that shoot by going to where there is the most light. When the young hatch, they kill the pine's leader which results in forked tree as new multiple leaders eventually replace the slain leader.

On the negative side, briars can make walking mighty unpleasant; and they prefer to grow on trails where there is more light. But worse still, they make whole sections of the forest almost inaccessible. So while I had been avoiding those areas, the balsam firs were busily trying to reforest the land. I could see the cycle repeating itself. Biomass cuttings would remove balsam firs so thick that they grew into spindly junk trees. Then blackberries would overgrow the area, with balsam fir nurseries beneath them, trees growing until they would eventually take over the area once again.

I made a pledge to influence what replaced the briars. Again, my weapon of choice in this battle was the brush cutter. It let me cut close to the base of the thorny plants without getting scratched. Still it was helpful to wear two pairs of pants and a pair of thick leather gloves while battling the briars. And I learned that it was especially important to wear eye protection because twice flying debris from the chainsaw or brush cutter got caught in my eyes. I've been lucky to have no permanent damage, but I could imagine what it would be like having a briar stuck in my eye and happily wore my safety goggles.

I did the bramble cutting in early spring or late fall when leaves were off so that I could see the tree seedlings growing beneath the blackberries. I left white pine, red spruce, hemlock, red pine, balsam fir, and tamarack in descending order of my preferences. Tamarack was low on my list, not because I dislike the tree, but because on this land they often become sickly and die.

In a decade or so, the era of blackberries trying to take over the world had passed. Now there are some near the edges of trails, but not even enough to keep us happy! We learned to make blackberry wine, which definitely changed our perspective on their value. Now we might have to try to find ways to encourage them. And the takeover of balsam fir is not the threat I originally thought it was. Each year I still cut down hundreds with my chainsaw or brush cutter, but I now have allies in the fight. The trees that were selected as keepers during tree harvests have become noble specimens. And as those trees become greater in stature, their shade makes it harder and harder for the balsam fir to send out armies of seedlings. Nature and I are reaching a balance.

The 1938 Hurricane and other Forest Shaping Events

In 1988 a large white pine was too close to our future septic system site, so I cut it down. Measurements showed that the tree was eighty feet tall and three feet in diameter. By counting the growth rings on the stump, I found to my surprise that the tree was only fifty years old. I was impressed by how good this environment was for growing white pines.

Being curious about how old some similar sized white pines were, I counted the growth rings on two other large white pines that had been cut down within the past year and found they were also about fifty years old! Two such similar trees might be a coincidence, three probably not. Searching for reasons why so many trees appeared to have been born at the same time, I remembered that 1988 year was the 50th anniversary of the Hurricane of 1938, a monster storm that devastated the forests in this area. When the 1938 Hurricane blew down trees and created clearings, young pine seedlings got plenty of light, and without competition from mature trees, they grew rapidly.

GRAVEL EXCAVATION

Before describing the gravel excavation, I should clear up any misunderstanding the word *excavation* causes. The town of Sandwich, New Hampshire requires an excavation permit whenever gravel is removed, even when you only lower a hill, leaving a smaller hill. When I thought of excavation before my intimate involvement, I assumed the result was a hole, quite likely an unsightly hole. But fortunately, that isn't always the case. When gravel was excavated from the property, hills were lowered, but holes were never produced. The gravel excavation resulted in an improved landscape from my prejudiced perspective as well as others who are not so prejudiced.

The gravel excavation that is described in this chapter occurred in 1987 and1988. Gravel was needed to create some roads for the ongoing tree harvests. And the tree harvests helped make the excavation possible because they provided a means to remove the trees that were growing on the gravel.

Prospecting for Gravel

During one of Peter Pohl's initial visits, he casually mentioned that we had lots of gravel on our land, which was news to me. And it was very exciting because it augured well for future projects. After Peter's visit, I walked around the property with a new perspective, that of a prospector searching for gravel. I found three sites that seemed ideal for gravel removal: Love Hill, the large esker, and a smaller esker. My rough estimate was that about 300,000 cubic yards of gravel could be obtained from those three gravel sources. Continuing to estimate the potential value of that gravel, I worked out the total using both 25 cents and a dollar per cubic yard. I concluded it could yield between $75,000 and $300,000 by selling the gravel!

However, I was long past considering the land just as an investment. We would be removing part of the Tree Farm's character along with the gravel. It was deposited long ago during the ice age and I would feel like a rapist plundering all of that historic treasure. But I did believe that removing some of the gravel could be done without substantially damaging the ice-age link.

The obvious choice for a limited gravel excavation was the small esker. In the shape of a horseshoe, it was contained within the larger horseshoe of the big esker. Because the small esker was bisected by Read Brook, as was the large esker, half of it could be removed and the resulting landscape could be made to look natural. At least that was my goal. I hoped I wasn't rationalizing too much when I decided that the Tree Farm would be better off if I traded the small esker for an improved road system.

In the fall of 1986, I showed Wayne Lloyd the proposed excavation site. He was interested in trading gravel for roadwork. I wrote to the Sandwich Planning Board to obtain an application to begin gravel excavation in January of the following year. The paper work that was required was substantial, requiring topographical maps of the area before excavation and after. I paced off distances, made estimates of the height of the esker, drew up the topographical maps, and took pictures as required for the application.

Much time went by before the excavation permit was finally granted. First, my original application was lost; then after the application was "approved" at the May 6, 1987

Planning Board meeting, I was notified that the approval wasn't legal because official notices had not be placed in the paper. Finally, on July 1 the excavation permit was ready to be finalized by the town. But shortly before that date I had been admitted to the hospital for an angioplasty to remove a 95% blockage of one of the arteries in my heart. Although the procedure was successful, and I recovered rapidly, I didn't feel up to attending the Planning Board Meeting. So they agreed to allow Len Marino to represent me, and I made him my official representative.

Len reported that there was quite a turnout at the meeting and things went relatively well. There was some concern that the gravel site would not be under sufficient control. So as a compromise, the previous (non legal) ten year permit was shortened to a four year permit, with the understanding that it would be renewed at that time if there were no major objections.

Gravel Excavation

Excavation started soon after the Planning Board issued a gravel permit. I was very pleased with how trading gravel for road creation worked out. Since the gravel site was a half mile from Chase Road, Wayne had to create a good access road. To do this he substantially upgraded Erratic Trail, which included installing a culvert at Read Brook. I had anticipated that step, but was amazed when two to three inches of screened gravel was spread the entire length of Erratic Trail! People often comment that Erratic Trail is much better than many of the town's gravel roads

Wayne had decided to create such a good road surface because his trucks were hauling so much gravel over it. He was hauling the gravel as far away as an hour from the site, willing to haul it that far because it was very high quality gravel. But I think he also hauled so much because he got a kick out of having his "own" gravel supply.

The busy truck traffic involved in the excavation of gravel led a neighbor to complain to the selectmen that the peaceful nature of the neighborhood was altered. I found this out when I received a letter from selectman Bud Burrows stating that there were serious concerns about whether the excavation was in compliance with the permit we had been granted.

A compliance hearing was held and I explained what I was trying to accomplish with the gravel excavation. I had prepared a paper to aid my presentation, and I had copies of it to hand out. The document stated:

I bought the land (160 acres) in 1975. The land at that time had only one short trail. The woods had not been managed for about forty years so the trees were too close together and most were of poor quality. For the next seven years I tried unsuccessfully to find someone who would selectively timber the land. I wanted the land timbered for two reasons: to thin out the poorer trees so the others would grow better, and to trade timbering for establishing roads. However, the timber was not of sufficient quality to attract loggers.

Meanwhile, I put in about three miles of trails – just me and my chainsaw. Most of the wood that was cut had to be left to decay since it was difficult to make the trails good enough for my pickup truck. One of the reasons a road system is essential for a Tree Farm is that it enables timber to be removed. The better the road system, the easier it is to attract loggers since they can be more efficient. Also the roads allow the Tree Farmer to be more efficient. And of course the roads can be used for fire protection.

The first road I had put in on the land was a result of having a pond dug. After consulting with Dave Weathers of the USDA Soil and Conservation Service, I cleared almost three acres of land and then had the pond dug in 1983. I was thrilled to discover that underneath the topsoil was excellent gravel which, when placed around the pond, resulted in an excellent road.

Dave Weathers also pointed out to me that Fred Bickford had recently started a biomass operation – they would selectively remove poor quality trees, chip them, and haul the chips away for fuel. I had Fred Bickford selectively timber forty acres at the start of 1984 and was thrilled with the result. There was minimal debris left and the process of improving the forest had finally started.

In 1984 I attained a long–sought goal: the land was certified as a Tree Farm.

In 1985 I had a road put in to enable Fred Bickford to come and do more selective timbering. The next year I invited Peter Pohl, the county forester, to walk the land so he could see the progress we were making and to learn what he might suggest for the future. When he saw a small esker that was making the land behind it inaccessible for Tree Farm work, he suggested we try to trade gravel for roadwork.

Last fall I had Wayne Lloyd over and showed him the proposed gravel site. He was encouraging – said he would be willing to trade gravel for road work, but couldn't promise how much he would be able to use since we are not near that much construction. As a result of that meeting I decided to go ahead with the project. That winter I had Fred Bickford clear one acre from the gravel site (he also did some other biomass cutting). That was only about half of the gravel site since I didn't want to commit myself more than necessary before I found out how things would work out. In February I applied for an excavation permit from the Town of Sandwich.

The application showed a site of 200' by 500', estimated that 30000 cubic yards would be removed, stated that we would stay at least five feet above the water table, and gave a restoration plan. I stated that the purpose was to improve the Tree Farm – gravel would be traded for roadwork. I estimated that it might take up to ten years to take out the 30000 cubic yards (a long time because of our location). The permit to excavate gravel was granted at the beginning of this summer.

Wayne has decided the gravel site is real good, so he has been taking gravel at a faster rate than I anticipated. Part of the reason for the large amount is that he got a contract for the Senior Citizen Center in Sandwich. Another part of the reason is that he has put in a fantastic road to the gravel site, which used up a lot of gravel.

I've attached a map that indicates the roads that are presently on our Tree Farm and also indicated what the road system may eventually look like. The actual course of the roads will be influenced by future biomass cuttings.

We are going to build a house overlooking the pond, and move there in 1992. Looking further into the future, my long-term goal is to be the New Hampshire Tree Farmer of the Year in 2000 – the 25th anniversary of when I bought the land. Even if I don't attain this goal, the quest will yield a Tree Farm that will be a credit to Sandwich.

Wayne Lloyd has the exclusive right to excavate gravel from our Tree Farm. Our agreement with Wayne is an informal one – he has no contract. I monitor his progress and am very pleased with his work. I entered the agreement expecting that for every four loads of gravel that Wayne took off the land, he would place one where I wanted it – I think we're doing even better than that.

If any one has any complaints about the gravel operation please let me know – I'll do what I can to accommodate reasonable objections. I care what my neighbors think. If people want a tour of the Tree Farm just call me.

The town officials decided that we were not violating any of the excavation permit's provisions. To help reduce noise level, Wayne Lloyd agreed that the trucks would use the brakes more instead of having the engine do the braking. He also promised that his men would not arrive before 7 AM. While the neighbor would have preferred to have no trucks, she was appeased. She liked the idea behind our Tree Farm and seemed interested in having a tour some day. The following year, I took her on a tour, which went very well. She seemed to appreciate what I had done and was ready to forgive, if not forget, the racket the trucks made.

The Sandwich 60

In the fall of 1987, after Erratic Trail was constructed, I was asked whether it could be incorporated into a ski mobile route for the local club. Dave Bowles, the trail supervisor, was excited about its inclusion because it would complete a long route they were developing. I happily agreed to the request, my only stipulation being that the skimobiles would keep to the trail so trees wouldn't be damaged.

An unexpected bonus came when I learned that Erratic Trail was also used for the Sandwich 60, a dog sled race approximately 60 miles long in March. I was thrilled to find out that the addition of our road had helped make the race possible, but disappointed that we missed the race. But since the race was billed as the first annual race, we definitely we planned to see the next one.

This first Sandwich 60 had been dedicated to the memory of Eva "Short" Seeley who had died two months previously. "Short" and her husband Milton were famous for raising and training sled dogs at their kennels and residence located about three miles from our Tree Farm in Wonalancet, part of Tamworth. The Chinook Kennels were previously owned by Arthur Walden, known world wide for training sled dogs for use in Admiral Bird's Antarctic expeditions. His lead sled dog was named Chinook, giving the kennel its name.

After Admiral Bird's first expedition, the Seeleys joined forces with Arthur Walden, eventually becoming the owners of Chinook Kennels. "Short" Seeley wanted to encourage paying tourists to come to see the home of Chinook, the famous sled dog. After much persistence, she convinced the State of NH that the road by the kennels should be a state highway, and so it became Route 113A.

Soon the state realized that it had acted rashly, because now that Route 113A was a state road, it had to be upgraded to meet minimum standards by paving the lightly traveled gravel road. So thanks to "Short" Seeley, we have a nicely paved state road that borders one-third mile of our land. It is still lightly traveled, not the most direct route to any town or village, but very scenic with lovely mountain vistas.

Route 113A forms a semicircle about 10 miles long, with one end on Route 113 in Sandwich and the other end on Route 113 in Tamworth. The Tamworth section is known as the Chinook Trail. Our section has the more mundane name of Chase Road, named for someone I've never heard of.

Wayne Lloyd's Grand Finale

By early summer of 1988, gravel excavation at the small esker was almost complete. In conjunction with the closing of the gravel site, I wanted to have Glacier Trail

driveable from Blackberry Crossing to Mill Brook Trail. That required filling a low section adjacent to Turtle Brook. Some of this fill came from the gravel site, and some from a small knoll that was relatively close to Turtle Brook.

The knoll was to be utilized first because it was more convenient than the gravel site, which was a half mile way*. Hazen, Wayne's best operator, arrived on the morning of August 23 and I was thrilled to have him back to do more roadwork. When Hazen used the bulldozer to destump the knoll, we saw that, true to expectations, there was good gravel beneath the topsoil. Hazen pushed the gravel toward Turtle Brook, progressing to within 100 feet before the supply was exhausted.

Since the knoll's gravel was all used up, Hazen took the bulldozer back to the gravel site and spent the rest of the day working on site closure. At that time, I had no specific plans for the area. Eventually I decided to turn it into a field, thus Hazen's good house keeping practices were very beneficial.

The next day, a backhoe arrived early in the morning and the driver left again to get a dump truck and some culverts. Hazen arrived a half hour later and started using the backhoe to prepare for the installation of a culvert for Turtle Brook where it crossed Glacier Trail. The culvert arrived and things were progressing smoothly when it started to rain. Progress slowed as it rained harder and harder.

Wayne arrived in the early afternoon to discuss finances with me. With the gravel project ending, he had finally been motivated to compare the cost of the road work he had done with the value of the cubic yards of gravel he had removed for his own use. Hauling away 11,000 yards at 50 cents per yard, he calculated that he had taken $5500 worth of gravel from the land. But his records indicated he had put $11,000 of work time and materials into the roads, so I theoretically owed him more than $5000 dollars! That took me completely by surprise since I had thought we were working totally on a barter basis.

After a discussion, Wayne was willing to settle for my paying for the current roadwork. When I realized there was no such thing as a free lunch, I started taking a more active role in deciding what roadwork should be done. Hazen agreed with my observation that using the backhoe to load gravel into the dump truck was inefficient due to its small scoop. I postponed the Glacier Trail project until a larger loader was available. The delay of a day or two was also beneficial because it allowed the work site to dry out from the recent rain.

In general, it is best to avoid having roadwork done during rainy times. Heavy equipment can turn a normally passable road into a quagmire. It takes a very solid road to withstand the impact from a fully loaded dump truck in a rainstorm and it isn't financially practical to construct such a road when it will be used by heavy equipment infrequently. I was happy to wait a few days to begin work again and save both money and the roads.

The men returned bright and early on Saturday morning, anticipating they would finish the project by noon. Four men were there to run two dump trucks, a larger loader, a dozer and a backhoe. The loader had been used during the summer to dig much of the gravel from the field gravel site. Its bucket held two and a half cubic yards, more than twice as much as the backhoe, which made the road work on Glacier Trail progress much more quickly. The two truck drivers alternated filling their own trucks using the loader, then drove the truck to Glacier Trail, dumped the gravel and returned for another load of gravel. Time sharing the large loader added to the efficiency. And with two trucks and the

* That knoll is not to be confused with a much larger kame that used to be located at Blackberry Crossing. That kame had previously been used to improve roads close to the crossing.

loader working as a team to supply the gravel for the road, Hazen was kept busy spreading the fill at the road site.

Even though I did not need a heavy duty road capable of allowing logging trucks to use it in wet weather, they couldn't skimp much on the fill because a very firm road was needed to avoid getting the dump trucks stuck. I was surprised when I saw the seemingly solid road flow like jello under the heavy loads the trucks were carrying. The road was slowly extended using lots of stone and gravel, and having the bulldozer pack the material down many times.

With about four more loads needed to complete the missing link on Glacier Trail, the loader at the gravel site broke down. They returned on Monday and finished the job while I was at AT&T earning money to pay for the work. The final bill was $4939.45, which was close to the amount that Wayne had said he had lost on the gravel-for-road project! But even though that final figure was probably not a coincidence, the project ended with both of us happy. For a relatively small amount of money, I had the genesis of a fantastic road system, and Wayne could tell himself he had lost little money on the gravel project.

A Trip Around the World

When we drove to the Tree Farm the following weekend, Julie and I saw three deer by the side of the road. Because Heather wasn't quick enough to see them and had never seen a wild deer in her five years of life, we decided to drive on our new roads at dusk in hopes of encountering a deer for her to see. I wasn't very optimistic because the truck would make so much noise, but I was excited about seeing how the road work looked so I eagerly agreed to the trip.

Blackberry Lane was a mess. When I had last seen the road it was full of ruts from hauling gravel in the rain. The dozer had filled in those ruts by back-dragging its blade, in the process creating deep furrows by dragging large rocks for long distances. The road was barely passable, but we managed to get to Blackberry Crossing and from there onto the newly completed Glacier Trail, heading toward the western boundary.

Glacier Trail was smoother than Blackberry Lane, but still a lot worse than when we had last seen it. We almost got stuck when we crossed over Turtle Brook and hit a mound of gravel, hidden by the dim light, that had been left in the middle of the road. I backed up, lowered the gravel ridge with my foot, climbed back in and proceeded forward for another fifteen feet; then got stuck again. I hadn't seen a small tree stump and we were almost wedged on it, but were able to slowly back up. I walked forward to scout for other tree stumps, then managed to drive through, dodging the remaining ones until we finally got to good road again. The rest of the trip back to the barn was uneventful, but we were thrilled to finally get back, despite the deerlessness of the trip. We congratulated each other on having traveled safely around the world! A decade had elapsed since I first started working on that route. It felt real good to finally make that round trip.

Closure of the Gravel Site

In April of 1989, Bud Burrows from the Sandwich Selectmen and Tom Hadley from the Planning Board came to determine whether the field gravel site could be officially closed. They stood in the middle of the excavation site and surveyed the surroundings. I expected they would walk around the perimeter of the site, but they didn't consider that necessary. Bud told me that he wished all excavation sites ended up looking that good. He said that he appreciated quality work when he saw it, and he saw quality work. I told him

all excavation sites might end up like this if they had been done by Tree Farmers who take pride in how their woods look.

Reforesting the Gravel Site

Over a period of a few years I reforesting part of the gravel site and turned the rest into a field. Creation of the field is described in a later chapter. In this section I'll describe the reforestation which I found extremely satisfying. I felt that I had incurred a moral obligation to make the site nicer than before I allowed bulldozers to remove the small esker and truck the gravel away. I found this moral obligation more compelling than my need to fulfill the reclamation plan I had filed with my application for the excavation permit.

Spring is the best time to plant trees, especially when the planting area resembles a desert as did our gravel site. So spring it was. What a physical challenge that tree planting was! Half of the trees that were planted at the gravel site were in an area requiring a pick to remove rocky gravel packed hard by the earth-moving equipment. For a while I used brute strength, raising the pick over my head and trying to beat the gravel into submission. Eventually I learned that finesse did the job faster and easier. Raising the pick just a foot and bringing it down gave enough energy to push aside rocks up to an inch in diameter and the pick bounced off larger ones. As the hole was enlarged and the edges of the larger rocks were more discernible, I could use the pick to pry them out.

Before a tree could be planted, each gravel hole had two shovelfuls of loam added, then three shovelfuls of wood chips from a previous tree harvest were spread over the top. The wood chips would aid in moisture retention and give the trees nutrients as the chips decayed. I planted white pines and scotch pines from our Kingston nursery and newly purchased seedlings of white spruce, red pines and concolour fir. I planted many different species because I didn't know what would best survive in that environment.

The trees were planted every five feet, which would be too close when they matured. I wanted to create an area of beauty while the trees were small and also have enough trees to adequately fill in the area if the survival rate of trees was poor in that inhospitable location. But because of the care taken in planting, very few of these trees died of natural causes.

In the passing years I have thinned the trees as needed, keeping the remaining ones at an optimum spacing. The survivors periodically have their lower branches trimmed. With many of the lower branches now above the five foot level, walking is pleasant there. The new forest floor is slowly becoming moss covered, with pine needles and pine cones all around. Maybe in my lifetime that reclaimed area will become my new Japanese Tea Garden.

DICK AND JULIE'S NEW HOME

We Sell Clarinda's House

For a year after the pond construction, we commuted back and forth to visit it from the house a third of a mile away. It became the center of our existence in North Sandwich and not a day went by without spending part of the time there.

Julie and I realized that if we sold the house and built a dwelling by the pond, life would be easier and more enjoyable. But in spite of those sentiments, neither of us felt the immediate need for a large house. That could wait until our permanent move to Sandwich. So we opted for the solution often used by pioneers – we built a barn first.

In earlier days, the barn was often built first because it could house both animals and people. The convenience of a house came later. That seemed like a perfect solution for us too. Instead of sharing the barn with livestock, we would share it with our vehicles. Then our barn could later serve as a combination garage and guest house.

We put the first Sandwich house on the market in the middle of 1985, hoping to postpone barn construction until the house sold. But due to a combination of high interest rates and the remote location, the house didn't sell until 1986 when it was purchased by Jacob and Judy Newall, eventually becoming Clarinda's house when they moved.

The Tree Farm gets a Barn

The barn design came from Alvin Zink, my brother-in-law once removed. For sometime I had been impressed with his barn, and he let me measure it to get its dimensions. Ned Coville, our builder, looked over the plans I drew up and suggested extending the second floor wall up another four feet to provide plenty of headroom on the third floor, making it easier to walk around and allowing more storage space.

Ned, along with his assistant Phil, built our barn during the summer of 1986. The three 24'x40' floors would house vehicles and a future work shop on the first floor, a game room and dwelling area on the second floor, and storage on the third floor. We planned to have more finish work done on the second floor the following year, but the barn already provided a roof over our heads and the walls were sheathed so rain and bugs were kept out. We had no electricity, no running water, and no bathroom − but a great views!

We had a great view from the picture window, and another great one from our cupola. We felt that a proper barn should have a cupola, a little crown-like structure on its roof. A cupola provides great ventilation in the summer time, like a chimney conducting heat out of the barn. In an agricultural barn, that ventilation helps to dry out the winter supply of hay.

We wanted a cupola for ventilation reasons, but also for aesthetic reasons − making our barn match our mental image of what a barn should look like. The cupola was its crowning glory. Ned out did himself, meeting our request that it be large enough to comfortably seat two people, but exceeding our expectations for construction quality. The structure was strong enough to support an elephant and had four removable shutters with slats painstakingly made by hand.

The cupola was accessed from the barn's third floor by means of a ladder. That was a bit primitive, but stairs were never considered. That would be like a kid wanting stairs to his tree house. Just not the right image.

The cupola was so nice we used it much more than we had anticipated. When the shutters were out, it was like sitting in a bird's nest. The view was better than from the picture window and we were up high in the midst of the trees, an adult's version of a tree house. Sitting in the cupola brought on happy thoughts. Enjoying the view and the tranquillity, you couldn't help but feel "life is good". Even my workaholic nature was briefly stilled.

From the time the barn was built, three year old Heather and I liked to have picnic lunches in the cupola. It was peaceful sitting there, screened by the evergreens from the occasional cars that went by. And unlike the average picnic, there were very few bugs. Even in the worst of the mosquito season when the pests at ground level made us cover every square inch of skin, few mosquitoes made it up as high as the cupola. Evolution seemed to have taught them that warm blood was not usually found that high above the ground. And Jonathan Livingston Mosquitoes were few and far between.

But other flying objects did occasionally frequent the cupola. One night, before the construction was completed, I tented on the third floor of the barn. At dawn I was awakened by a fluttering noise. When my confusion wore off, I saw a bat flying in and out of the cupola, having a grand time. I had grown to appreciate the mosquito control done by bats and greeted him with delight.

Electricity Connected to the Barn

In 1987 electricity was connected at the barn. It had been fun at first, living with no electricity on weekends and vacations because it made us feel close to the pioneers who used to live in the area. But by the end we were really looking forward to having electricity. Knowing the wonders that electricity can bring made it difficult to live without it after a while. I found that having electricity affected our lives there more than having running water did. Electricity gave us lights and a microwave, but also ran power tools. Of course, we could have bought a generator and avoided our wait to be connected to the electric grid, but that never even entered our minds! I don't believe that we were slow thinkers or lacking in imagination. It was more that the delayed gratification made progress even sweeter.

Why Move?

Why did we really want to move to the Farm and how did we envision living here permanently? And for me, did part of me want to be a hermit? Was I seeking an escape from job related pressures, fleeing the rat race? That was a difficult area for me to probe – because feelings are imprecise and not subject to scientific measure.

At the bottom of it for me was my acute awareness that life is finite and I wanted more time to "stop and smell the roses". I wanted to just sit in the woods, not feeling as if I had to rush to meet my self-imposed property improvement goals, then rush back to confront technology again. It would be delightful just to sit and wait for wildlife to come by.

I had been a goal driven person for too long. Hopefully, the last goal I would be obsessed with would be arranging my life so that I'd be living on the Tree Farm by age fifty. I wouldn't be able to gear down my goal driven mode of operation immediately, but not trying to lead the lives of both an engineer and Tree Farmer should help.

Did I want to be a hermit? Decidedly not. Yes, I assumed that in Sandwich I would have fewer acquaintances, but I also felt that I would have closer friends. Less time spent rat racing would leave more time for peopling.

Ready or Not, Here I Come! Sort of.

In November of 1989 AT&T offered an incentive plan to encourage employees to retire. Suddenly, thanks to the plan, I was theoretically five years older and my length of service was five years longer. For pension calculations, I became 52 years old and had 30 years of service. My supervisor's reaction was similar to mine. His response was, *If you won the lottery would you turn it down?* We both decided to officially retire on December 30, 1989, the specified date.

Since our nest egg was not what Julie and I had hoped it would be when I retired, I planned to consult for a while. Little did I realize that my consulting, all of it for AT&T/Lucent, would be so successful that for the next five years I would have less time off than before retirement! But the good news was that, anticipating more leisure time, I convinced Julie that it was the right time for us to start the construction of our retirement home at the Tree Farm.

Black Snout

In the fall of 1992, with the leaves off the trees, we were happy to see a view of Black Snout Mountain, a small mountain to our south, from Heather's bedroom window. To enhance the view, we decided to cut down some trees. On Thanksgiving weekend, my older daughter Cindy, her husband Tony, my brother Dave, Julie and I started this view improvement project. I cut down a large maple, and the others helped clean up the debris.

During that winter, I cut down more trees to further improve the view, which at the same time provided firewood for the next year. Julie and Heather helped by determining what trees were blocking the view, a challenging job because from the base of a tree you could see neither the house nor the mountain. Sometimes when a selected tree was cut, the person at the house could see no difference. That was disappointing, but even if that particular tree wasn't in the way, it was still good for firewood.

House Facts

The house was special to me for many reasons. High on my list were the spectacular views from this south-facing orientation with a lovely pond in the foreground and a small mountain in the background. Wildlife often visited the pond: moose for a drink, a great blue heron or otters to see if there were any fish, and occasionally some Canada geese for a brief respite on their north and south migrations, all visible from the house’s many picture windows.

At the time of house construction, we had two dogs. To make the floors in the house more impervious to dog traffic, the first floor halls, kitchen, and dining room were covered in lovely blue ceramic tiles. The floors were pretty and effective, but reflected instead of absorbing sound waves as a hardwood floor would have done. But experience had taught us that even though we liked hardwood floors better, they were not appropriate for a household of energetic dogs.

Another great feature was the attached barn. The barn’s guestroom, our old living quarters, provided an overnight visitor with a feeling of independence and solitude, while being adjacent to the house. And, as mentioned earlier, the view from the cupola was an added pleasure.

Because the house was heated by burning wood, we designed special features into it to. I'll leave a description of those features until later in the book. Heating a house with wood is such a central part of my life and philosophy that I have dedicated a chapter to that subject!

MY BACKHOE – JAWS

The Farmer gets a Dump Truck

Having watched others work on our road system for years, I developed *heavy equipment envy.* Bill Read told me that for my needs, used dump trucks were available for around $2000. In 1990 I found a fantastic buy, a 1967 Dodge dump truck that cost only $650. I spent another $350 dollars having it repaired. For a thousand dollars I had a dump truck that hopefully would have years of use on the Tree Farm.

During the fall I put the truck, which we named Big Bertha, to work, helping Bill when he stumped the hillside of our future house. He dug the stumps out with his excavator, loaded them on my truck, and I hauled them to a low spot near the field gravel site. By the time all the stumps were removed, I had hauled more than thirty loads of stumps. Len Marino, my neighbor, drove the truck for one of these loads and I agreed with his statement that a man shouldn't be allowed to have so much fun.

During the fall, the dump truck was also recruited to haul fill for the septic system. By the time these two projects were finished, the truck already had half paid for itself. I began thinking about buying a used tractor or backhoe so I could load my dump truck myself. One 'toy' is never enough!

My Backhoe – Jaws

In 1991 I worked a substantial amount of consultant overtime for AT&T, and was well rewarded for my efforts. Being a consultant was paying off. Instead of donating my overtime to the company for free, I was paid for every hour I worked. For years I had fantasized about owning heavy equipment to help me at the Tree Farm. The extra income I made in 1991 made it a good time to fulfill my dreams. But what should I buy, a tractor or a backhoe?

A tractor usually comes with a bucket in the front, which can be used for loading material. And tractors have *3 point hitches* which can be used to run various attachments, commonly a backhoe unit for digging. With a bucket in the front and a hoe attachment in the rear, a tractor can be made to impersonate a backhoe. But the average tractor with this equipment is a poor imitation of a backhoe, the hoe usually much smaller than a backhoe's. But there are many other attachments that can be added to a tractor: post-hole digger, brush cutter, wood splitter, and winch to name a few. It was the versatility that I found so appealing.

Over the years I vacillated when trying to choose which type of machine for working on our Tree Farm. I finally based my decision on the past. When over the years I had hired Bill to do work for me, the most common reason was to dig holes or spread material, the type of work in which the backhoe excels. It seemed best to buy a backhoe, and hire someone with a tractor on the rare occasions when the backhoe wasn't suited to a particular job. And, knowing myself, those rare occasions wouldn't happen since I'd make do with what I had!

After looking for used backhoes in a number of places, I went to Jordan-Milton which sells Caterpillar equipment in Bow, NH. While they didn't have exactly what I wanted, I was advised to check back in about a month when their rental units would be

returned for the winter. A few weeks later they called to let me know they were interested in selling some of their excess equipment bought during the building frenzy that struck New Hampshire in the 1980s. To reduce stock, they decided to sell many of their rental units, including back hoes. Because I had recently expressed interest in buying a backhoe from them, I was one of the first notified of the sale. I had the pick of the litter and that was exciting since all backhoes would go for the same price – $29,000.

I told them that I wanted a 4-wheel drive model 416 Caterpillar in as new condition as possible and their branch location in Maine had one with only 920 hours of use that sounded perfect, so I hurried over. It was love at first sight. The machine looked to be in excellent condition as I had expected since a well maintained machine can easily be used for more than 10,000 hours. This one should last me a lifetime.

My saleswoman, Tracy Allard, drove the backhoe to an area where I could try it out. I used the hoe to dig a couple of scoops. What power that machine had! For a frugal person like myself to spend almost $30,000 on a nonessential machine made the prospect of owning the machine seem unreal, but what a deal! I bought it, an almost new machine at half the new price!

They kept the machine to service it and add a couple of extras that I had requested: a metal plate to reinforce the front bucket and prevent wear, and an essential in my mind – a block heater that could be plugged into the backhoe so it would start in cold weather. Without it my backhoe had difficulty starting when the temperature was much below freezing, but with the block heater it starts like it's summer.

I named it Jaws, a fitting name for a monster that has a "mouth" in both its head and tail sections. When Jaws arrived at the Tree Farm, winter had almost started. I wanted to learn how to use her in optimal conditions, so I decided to wait until spring before doing any serious work. However, I did take Jaws for a tour of our roads and she liked what she saw, but thought we needed some more!

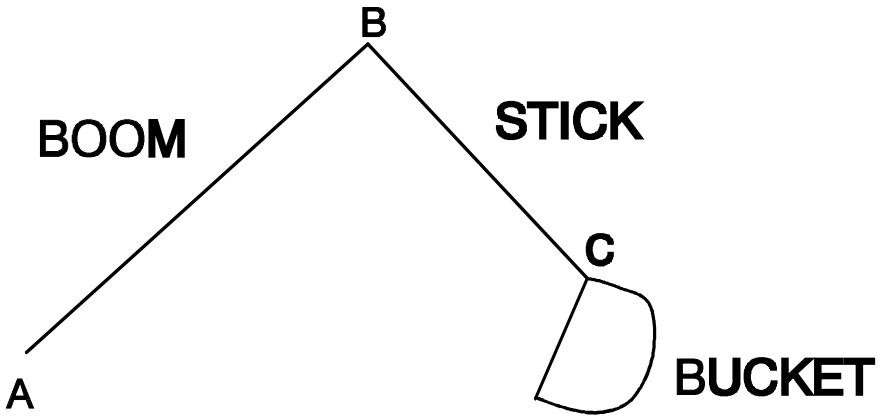
When it came to servicing my equipment, I feel competent to change the oil, but not much more. Realizing my limitations, I had addressed that problem before I went looking for backhoes. Fortunately for me, my neighbor, Len Marino, enjoyed maintaining equipment, and he had also longed for a backhoe. The solution to my problem was letting Len use Jaws in return for his being responsible for keeping her in top running condition. We both thought we had a good deal, which was indeed the truth.

Backhoe Kindergarten

On Mill Brook Trail there was an area where gravel had been removed over thirty years ago and top soil, tree stumps, and even trees had been pushed aside in mounds to clear it for excavation. An unsightly hollow was left when too much gravel was excavated. I decided that my first project would be using the mounds to fill the low area. That would give me a good opportunity to practice using both the bucket and the hoe. And since the area was generally flat, there was no worry of rolling the machine over, my biggest fear.

I started using the backhoe on Mill Brook Trail in mid April of 1992, supposing the frost would be entirely out of the ground. But the previous winter had seen little snow until January so the frost had penetrated almost three feet into the ground. The warm spring sun had thawed the ground down a foot, but had not reached the lower frost.

So the first weekend I mainly used the hoe to scrape the thawed topsoil from the surface of the piles, working it toward the hollow. That was a good learning experience for hoe control. The hoe consists of three components: the boom, stick, and bucket.



The movement of the boom, stick, and bucket are controlled by two hand operated levers. These two levers are analogous to computer "joy sticks"; they can be used to send more than one command at a time. In the description of their functions, I will mention what happens when moving a lever forward or back, then I will describe what happens when that lever moves left or right. And if the lever is moved at an angle, then a combination of these events will happen. But before getting to the more advanced combination commands, let's first learn the simpler unidirectional commands.

The boom, which is attached to the backhoe, pivots about point A in the above drawing. Its motion is controlled by the right hand lever: push the lever away from you and the boom pivots down; that is it moves away from you; pull the lever towards you and the boom comes towards you. Since the direction the boom moves follows the arm motion, this control is quite intuitive.

The stick, which is attached to the boom, pivots about point B. Its motion is controlled by the left hand lever: push the lever away and the stick pivots up, that is it moves away from you; pull the lever towards you and the stick moves towards you. Again, this is intuitive.

The bucket, which is attached to the stick, pivots about point C. Its motion is controlled by the right hand lever (the same lever that can be used to control the boom): move the lever to the left and the bucket closes, that is it rotates towards the stick; move the lever to the right and the bucket opens. I didn't find control of bucket curling to be intuitive so it took many sessions for it to become an automatic process.

The boom-stick-bucket combination can be swung from side to side by moving the left hand lever from side to side. Move the lever to the left/right and the boom-stick-bucket moves to the left/right.

For my first session, I concentrated on controlling the backhoe by moving the levers left and right or forward and back. I didn't always remember which control did what! After about an hour of my first session with the backhoe, my concentration power was over used and I had to quit for the day. But by that time I had the individual motions fairly well mastered. So as to not leave you in suspense, I'll proceed to the more advanced lever control forthwith.

Remember that moving the left hand lever forward causes the stick to move out, and moving the left hand lever to the left swings the boom-stick-bucket combination to the left. So moving the left lever simultaneously forward and to the left, that is, forward on a diagonal, causes the stick to move out as the boom-stick-bucket simultaneously swings to the left.

As one becomes skilled, there are various combinations that become second nature.

- To bring the hoe towards you, a constant height from the ground: pull both levers in.
- To fill the hoe
  curl the hoe towards you while also bringing the stick and hoe towards you. This accomplished by pulling both levers in while simultaneously pushing the right lever towards the left.

Sounds confusing, and it can be at first, but practice made it second nature. Now the boom, stick, bucket are like my upper arm, fore arm, and hand: I don't have to think how to control either set of appendages. The brain's ability to adapt is a wonderful thing.

A few years later, I spent a weekend with my son Rick teaching him how to use the backhoe. He learned how to use it much faster than I did. True, he had a more experienced teacher than I did, but I'm also suspicious that coordination comes easier to him. But fortunately for me, one of my major characteristics is perseverance. Perseverance, hard work, and an open mind can overcome a lot of handicaps, real or imagined.

During that first session not only did I use the hoe, I used the bucket located on the other end of the machine. With only one control lever, in theory it sounds quite simple, but I found control of the bucket even harder to master! Moving the lever to the left rotates the bucket up to fill it and moving the lever to the right rotates the bucket down to empty it. Pushing the lever forward lowers the bucket and pulling the lever back raises the bucket.

To fill the bucket from a pile, the operator has to apply forward pressure on the accelerator, simultaneously raising the bucket and rotating it upward. That is: step on the gas, pull the bucket control lever towards you and to the left. Then not too much pressure on the accelerator pedal or the tires will spin and lose their traction. Don't raise the bucket too fast or it will be above the pile before it is full. Don't rotate it too fast or it will be closed before it is full. Complicated!

Adding to my difficulty was frost that made it difficult to dig into the pile. The best solution was to use the backhoe to dig thawed soil from the top of the pile and come back another day to finish. As spring advanced, the frost receded; but it was well into May before the last of the frost was gone. In the meanwhile my skills were progressing enough that my sense of frustration was being replaced by a sense of power. And the four wheel drive was a fantastic feature. Not only did it help to keep me from getting stuck, it also provided extra traction for pushing material forward into a pile

But like the backhoe's brute strength, the four wheel drive traction should be used cautiously. For example, I was able to drive through mud more that a foot deep with no traction problem. But one time while the tire was rotating in that soupy gravel, the valve stem rotated against a rock and developed a leak. The leak was almost immediately noticeable, but fortunately it was slow enough that I was able to drive back to Len's before the tire became completely flat. That began what became an ongoing series of lectures from Len about respecting the backhoe. I learned a lot from his obsession with safety, but I ignored some suggestions because it was such fun playing the real life backhoe videogame at warp speed once I graduated from back hoe kindergarten!

Danger in the Backhoe

Early in January 1993, when there was about a foot of fresh snow, I took Jaws out to pack some trails for skiing. Going down the hill towards the field on Erratic Trail was no problem, but getting back was a different story. Before the snow came, there had been a freezing rainstorm and when I tried to go back up the hill, the backhoe just spun the snow off the ice leaving a very slippery surface below the tires.

On my third attempt, I got within ten feet of the top, then started sliding backwards down the hill with so little traction that steering was ineffective. The backhoe bounced off the base of the esker and teetered a little before settling down on all fours again. It hadn't come close to flipping over, but it scared me enough to call it quits on my attempts to make it up the hill.

I walked to Read's house for consultation and fortunately Bill was home. We decided it would be best to go up the ski mobile trail and come out in his back yard, but I couldn't make it up that way either. Finally we decided the only way out was to use the hoe to pull the machine up the esker hill, somewhat like an inchworm pulling itself along. That was a slow process, but the progress was rather steady. The most difficult time was at the end of each pull up the hill when the hoe had to reach forward again. During that transition period, I had my foot on the brake and moved the hoe forward as rapidly as possible while slowly slipping back down the hill. I was very grateful when I finally made it to the top.

TRAIL AND ROAD EVOLUTION

Rustic Trails

Because of my training as a Tree Farmer, I spent years developing a road system that provided access for logging to much of the property. Erratic Trail, Blackberry Lane, Glacier Trail, and Mill Brook Trail could all be easily traveled by car or logging truck. Now that I had a backhoe, it was tempting to make all our trails super highways, but I came to consider that a poor idea. Heather expressed similar feelings. So I decided to develop some trails that were not meant for vehicles, but just for hiking.

In the fall of 1993 I worked on two such trails. The first, Wildlife Way, provided an alternate route to Erratic Trail. Even though it was intended for hiking, I used Jaws to help smooth part of the trail, but I strove to produce a trail that showed little evidence of backhoe intervention. When I was tempted to regress to my super highway mode, Heather helped me by stressing the beauty of rustic trails. The resulting trail, was satisfying to the entire family. And as time passed, grass automatically reseeded the disturb parts of the trail, erasing all traces of backhoe work.

The other trail that was constructed in 1993 was Love Hill Trail. It had a junction with Mill Brook Trail, close to Big Pond. From there it meandered behind the pond following a relatively dry route through the treed swamp, then over a lovely small kame, through a nice mossy area, past the Japanese Tea Garden, finally arriving at Glacier Trail near the base of Love Hill. The result was a lovely, peaceful trail with a view of Mount Whiteface. Over the years, that trail was extended so hikers could continue up and over Love Hill, and then bear west to arrive back at Mill Brook Trail.

Towards Natural Roads

An easy way to envision if a road will be aesthetic is to ask the question, “If this road were unused for the next hundred years, would the average person be able to detect that it ever existed?” It the answer is No, then this meets my definition of being a natural road. Fifty years works just as well in this fantasy game, as long as you are willing to neglect the lack of mature sized trees.

The reclaiming of a road by nature consists of grasses, brambles, and seedlings first taking hold in the road. As these plants are maturing and becoming pervasive, leaves and needles from nearby trees will be adding their biomass to the road as will falling branches and entire trees. Thus it is easy to envision that much of the road’s traces will be erased in a relatively short time.

What will be the hardest for nature to obscure? The parts of the road that appear most unnatural. Except for some special cases such as the Grand Canyon, nature does not like sharp contours. She is even continually trying to wear down mountains. A steep banking on a roadside does not look natural, and a hundred years from now steep banking on two sides of a road will still look unnatural and cry out “road”. An extreme example is a highway that has been created by blasting out rocks to form a narrow pass. A thousand years from now that will still look unnatural.

One of the most important criteria when creating a natural looking road is to follow the existing contours as much as possible. And of course this helps to avoid constructing a straight road. They are efficient for highways, but not pleasing for byways.

In our woods, the numerous hollows and bumps that have been left by glaciers often make if impractical to follow existing contours. But because the bumps are gravel deposits, this is really not a problem but a solution. The goal is too use the gravel bumps to fill in the next hollow so that it will look as if a glacier had done that sculpting, not a bulldozer. Glaciers smooth, they don't leave jagged unnatural looking edges.

All things being equal, the road should be as narrow as possible, so it can do its best to resemble a path. If a backhoe is being used to create the road that obviously puts constraints on how narrow the road can be. But if the purpose of your woods road is to provide access for hauling out firewood via your pickup truck, concentrate on creating that minimal road, even it implies a backhoe has to traverse the road gingerly.

The Influence of Fred Lavigne

One of my favorite words is oxymoron, meaning something that is self contradictory. Fred Lavinge is a professional logger who tries to talk people out of logging. I find it oxymoronic that a logger is also a tree hugger. More than anyone, Fred has caused me to analyze the tree harvests that have occurred here, and the resulting road/trail system.

Fred and his wife Evelyn Mackinnon are friends who are active members of the Wonalancet Out Door Club. Fred was also the driving force behind the founding of the Friends of the Sandwich Range and I occasionally attend their meetings. Thanks in large part to the Friends of the Sandwich Range, more woods has been designated Wilderness in the Sandwich Range.

After the tree harvests were completed on this property, and the road/trail system well established, I invited Fred and Evelyn for a hike to show off the fruits of my labor. They were impressed with the amount that had been accomplished, but that impression wasn't all favorable.

Fred's main objection was to the road system, which is much too prominent for his liking. His ideal woods are those that are undisturbed by man, which helps explain why he has been so active in working to have more National Forest set aside as Wilderness. He loves to explore woods that, to the average hiker, display no evidence of human intervention, and discover artifacts of early settlers.

As members of WODC, Fred and Evelyn contribute many hours each year to trail maintenance so that hikers can enjoy the Sandwich Range. So trails and preventive maintenance certainly have their place in Fred's world, but he is always vigilant about minimizing human impact on nature.

But wood products, be they for building houses, heating those houses, or creating numerous consumer products, are an important part of civilization. And Fred and I agree that heating a house with wood is more environmentally friendly than using fossil fuels. In fact, Fred has an awesome wood furnace that, sitting outside for convenience, consumes many cords of word per year so they can enjoy a civilized existence. For that matter, he has a miniature wood stove he takes winter camping so they can be comfortable on bitter cold nights.

Fred's philosophy has evolved over the years. He is more accepting of logging on private lands than he used to be, but more protective of National Forests. I think that is a sound policy in the Northeast, where the federal government does not own a substantial portion of the forests

But returning to the woods on *this* tree farm, conversations with Fred have caused me to retrospectively analyze the tree harvests. And I find that I would do them all over again with no changes. I still think they sped the process of restoring the forest from the ill effects of earlier logging that emphasized profit by taking too many high quality trees. This time around, high quality trees have been planted where their numbers were insufficient due to prolific balsam firs, keeping the firs from ruling this forest again.

But I would change some approaches to road building. I would make trails narrower so they would be less obtrusive. Yes, to be able to drive on a road to gather firewood does require tree stumps to be removed, and for me to remove tree stumps requires a backhoe, and that backhoe dictates an original road width of eight feet. But the present road widths tend to be more like twelve feet.

My theory behind making twelve feet wide roads was to allow eight feet for the driving surface and an additional two feet of shoulder on either side. Without those shoulders, trees would soon intrude on the driving lane and present problems. I still like that design. But I have decided there is no reason to keep the shoulders free of trees. Attractive specimens can be encouraged to grow there, with a commitment to trim the trees as they extend into the roadway. As those trees mature, they can then spread above the roads, not interfering with wood vehicles, but forming a canopy above.

So if I am allotted enough time, my roads should be more and more pleasing to Fred. But, if fate requires them to be handicap accessible for me, I'll be happy to have wider roads for driving. But yes, Fred, this property is by no means maintained as a Wilderness. Wilderness with a capitol W rules out mechanized transportation. Fortunately, Wilderness of that kind is only a couple miles away. I enjoy the best of both worlds. But thanks to you, I am treading lighter, and hopefully having less of an impact on Nature's wonders.

THE FIELD

Genesis of The Field

Because of the sometimes non sequential format of this book, the field created at the gravel excavation site has already been mentioned. It will now be given the detailed attention it deserves.

When we moved to the Tree Farm in 1992, Julie's career was greatly affected. Over the years she had established a reputation in the Southern New Hampshire region as a preeminent dog trainer. She had more business than she could handle. Moving a hundred miles north was very traumatic professionally. In many ways it was like starting all over.

I was the one who had been most enthusiastic about moving to Sandwich at that stage in our life, before Julie was fully committed to all the changes the transition would entail. Because I felt responsible and wanted to help her career become established again, I suggested that I make a field that could be used for dog training and Julie thought it was a great idea.

By that time, Julie was heavily involved in a sport called dog agility, an athletic sport for both the dog and handler. The goal was for the dog to travel through an obstacle course of jumps, tunnels, and other crowd pleasing types of equipment as rapidly as possible, making no mistakes. To be successful requires good team work between the very well trained dog and handler.

We felt that if we built a field, people and their dogs would come to be trained by Julie. We already had the large flat area made when I traded gravel for road work. Now my job was to smooth it, haul hundreds of cubic yards of topsoil to the area, spread the topsoil, and seed it. Even though I was still working at least 40 hours a week for AT&T, some via the Internet at our Tree Farm, and some in northern Massachusetts, I promised Julie the field would be ready for use by the first of August the following year! My work at the Backhoe Kindergarten had given me the confidence that I had the necessary skills and equipment to accomplish my goal. Plus it helped a lot that I was a workaholic.

The field work was started early in the summer of 1992. After I leveled the field area the best I could, I started hauling topsoil. Most of the topsoil came from the Blackberry Lane area. When that road was established, a bulldozer had pushed the topsoil to the sides so that the road would not be muddy. The result was a nice gravel road, but the banks of the road looked as if a snow plow had come by and plowed topsoil instead of snow. So while I was creating the agility field, I was simultaneously beautifying Blackberry Lane.

I used Jaws' hoe to gather the topsoil into piles which were then loaded by the bucket into Big Bertha, the dump truck. Then I'd get out of the backhoe, into the truck, and a half mile later I would dump the load at the field site. That wasn't work, it was fun! And it was also very satisfying to see Blackberry Lane looking better and better.

After a weekend of hauling, I took Jaws to the field and spread around the piles of topsoil. *Topsoil* might be considered a euphemism for what I hauled since there were so many rocks, sticks, and even tree stumps in that material. The hardest and least enjoyable

part of the field preparation consisted of removing those unwanted materials from the topsoil.

The stumps, sticks, and very large rocks were placed in Jaws' bucket and used to help fill a low area on the side of the field. The smaller rocks were put in Big Bertha and hauled to Mill Brook Trail to fill 150 feet of the road which was impassable because of mud. Thus I was really accomplishing three tasks simultaneously: beautifying Blackberry Lane, making the Agility Field, and upgrading Mill Brook Trail.

Rocks can be used to form an amazing road base. Parts of Mill Brook Trail had mud more than a foot deep and, but by the time I was done, the heavy backhoe could be driven on the road with negligible setting of the material. The trick was to put the largest rocks on the bottom, up to a foot in diameter, and then use smaller rocks at final grade.

In one area, I was amazed to discover that under the moss there was already a good road bed. For a stretch of twenty feet someone (perhaps Noah Bickford) had previously placed rocks. I love these connections with the past. The road had been previously been made passable, probably for logging purposes. But the amount of rocks that were placed there by me and my able assistant, Jaws, greatly surpassed the previous undertaking.

In filling all the way to Mill Brook, I had covered an area 150 feet long, 9 feet wide, and 9 inches thick with rocks − more than 35 cubic yards of rocks! But the "topsoil" that was brought to the field was still bountiful; it produced another 25 cubic yards of rocks that were placed in a pile for future road work. That total 60 cubic yards of rocks weighed more than 150,000 pounds and were all picked up by hand, mostly mine, but Heather, Julie, and our neighbor Clarinda Philips all helped at times. If the farmers who previously cleared rocks on our land were watching, I think they appreciated our carrying on the tradition of rock gathering.

The Greening of the Agility Field

To improve the odds of having the Agility Field ready for Julie's dog training camp in August 1993, I hired a professional, Hank Letarte, to hydroseed the field. After the rocks had been removed from the field, he came in May to spray a mixture of seed, fertilizer, and paper slurry. Fescue was the predominant type of seed since Hank said it would have long roots that should be well adapted to our poor soil. The purpose of the paper slurry was to provide mulch and thus help to keep the ground moist. The mixture was dyed green for aesthetic reasons

That spring and summer were very dry, a bad time to establish a field! Hank lent me a pump and some hose, and I borrowed more hose and a nozzle from the Sandwich Fire Department. For a source of water I used Read Brook, which was relatively close to the field. As the dry season progressed, the brook reduced to a trickle that was not sufficient for watering so I used the backhoe to dig a pit close to the brook. It would fill during the night and was adequate for watering the next day.

When I was watering the field, I got to play fireman. It took me some time to become proficient at handling the hose, but in a while I was able to move it without disturbing the grass seed too much. The nozzle was a fogger that could be adjusted to produce anything from a fine mist to a narrow stream. I tried to avoid using the narrow stream because it could splash the seed to one side, resulting in bare spots.

In June, Hank's pump broke down and he couldn't repair it right away. The drought was continuing and the new grass desperately needed water so I bought a new

pump and 300 feet of hose. For a nozzle, Bill Read showed me one that he had constructed from plumbing parts. I copied it and it worked fine. The only problem was that you had to use a finger to deflect the stream of water and break it into a spray. That often resulted in a tired finger, but fortunately I had more than one of them.

I watered the field every other day, unless there was rain, which still didn't happen very often. Hank came back once and sprayed on an application of fertilizer. By the start of agility camp, the field looked great and was ready for business. True to my engineering training, I had made an on time delivery.

White Mountain Agility School

During the first week of August, Julie had her first agility camp. More than thirty people and their dogs were here during the day, spending nights at local Bed and Breakfasts.

Part of my responsibility was to lead a hike each morning. Choosing a different route, we would enjoy the woods, eventually arriving at the agility field at 9 AM for the start of classes. The hike was a great opportunity to show people what a Tree Farm can be like and even those who didn't go on the hike seemed to enjoy the rural environment.

The pond was a major attraction. During the lunch break, people and dogs swam in it or just lounged around the edge and relaxed. Julie did some of her afternoon training on the grassed area at the far side of the pond. In fact, during a hot day, one person watched the lesson from a tube instead of sweating in the sun.

I was gratified to discover that our Tree Farm was so universally appreciated. It was as if it had found its *raison d'etre,* providing an environment where people could have a working vacation with their pets while enjoying nature. Having so many people enjoy our surroundings reminded us how lucky we were to live here. I looked forward to continuing opportunities to share our Tree Farm.

After such a successful first year, Julie expanded her White Mountain Agility School the next year. One of the new features was a camp that combined some dog agility training with hiking. The agility training was again at our field and the hikes were on our trails with a longer hike at Mt. Whiteface. A good time was had by all.

Topsoil from Big Pond to the Agility Field

After using the Agility Field for a couple of years, it became evident that the topsoil was too thin in some areas. With the stress of having people and dogs run over its surface, it was difficult to keep the grass in good. In 1996 I had created a vegetable garden on the far side of the pond, and during that project discovered that nature had been busy creating some terrific topsoil. The ingredients had been there for a long time, black muck filled with tree debris, dug from the pond in 1983 and spread to fill some of the low area behind the pond. But in the passing ten years much of the tree debris had decomposed, adding to the rich topsoil.

I used the backhoe to reach towards the treed swamp to remove some of the rich black topsoil that had been deposited during pond construction. Just narrowing the berm a few feet reclaimed a considerable amount of topsoil. I contracted with Bill Read to help in hauling the topsoil to the field, me operating my backhoe and he supplying the dump truck and driver.

Ah, the astute reader may question, "Why I didn't use my own dump truck?" Most of my backhoe work hadn't required a dump truck because it was usually most efficient to do the rearranging of conveniently located mounds of gravel with the backhoe, avoiding

the intermediate step of loading the fill into a truck. As a result, it slowly became obvious that time spent each spring getting the dump truck running again was not time well spent. Len had done a great job of keeping the backhoe maintained, and I didn't want to add more complications to his life with added dump truck maintenance. So in gratitude for Len's continuing vehicle support, I gave him the dump truck and told him to keep any money produce by its sale.

WILDLIFE POND

Now our second pond creation makes its official entry into this book. What to name the two ponds?. Dr. Seuss not withstanding, Pond One and Pond Two lacks imagination. To name the ponds, I went back to childhood memories. Our family's summer cottage was on Cobbetts Pond which had two sections joined together by a narrows, the sections universally referred to as Big Pond and Small Pond. I originally called our ponds Big Pond and Small Pond, again, not too imaginative, but sentimental because of the childhood link. When a divorce came along, I started calling the ponds His Pond and Her Pond. But with the passage of time, it was again time for renaming so I now refer to the ponds as Big Pond and Wildlife Pond.

Wildlife Pond receives her name from the wonderful setting; almost totally surrounded by eskers, it seems to be designed for wildlife.

Pondering the Wildlife Pond Site

The creation of Wildlife Pond spans many years, so back we go to 1987. In mid September, Milton, an employee of Fred Bickford, met with me to examine the various sites I wanted timbered during the continuing tree harvest saga. At the top of my list was the site of the future Wildlife Pond. Milton was very encouraging about the ability of their heavy equipment being able to work there. He thought they could do a lot more cutting at the pond site than I had anticipated. The trees were to be hauled out over Read Brook to the future field site.

At the end of September, I spent considerable time at the future pond site. This time I was doing all the planning myself, having learned enough during the construction of the first pond to feel confident about proceeding without Dave Weather's help. Perhaps it was rash, but if it turned out well I would reap extra satisfaction. I used surveying tape to flag the area that I wanted clearcut that winter, not an easy job because I had conflicting thoughts: flag a substantial area so the future pond could be large and leave adequate room to push the stumps, or flag a small area so if the pond did not come to fruition there would not be an unsightly blot on our land.

My decision was influenced by the fact that the area was already quite a mess with many large trees blown down because the high water table had resulted in their developing shallow root systems. There was even an area that I called the *tree burial ground* with 75 feet trees crisscrossing the ground, their root systems standing as unsightly earthy disks almost ten feet high. Many large trees still grew there, waiting for the next windstorm to fell them. Considering it an opportunity to prevent another tree burial ground from happening in the future, I settled on a relatively large clear-cut, about one and a half acres.

When I had finished flagging the area, I sat down and tried to visualize the pond there. Then I started to have doubts. What if the area was cleared and we decided not to have a pond dug? What if a pond were dug and there was not an adequate water supply? Did I want another pond dug because I subconsciously felt it will stop me from growing older?

Taking the last question first, I thought it possible that my subconscious might be striving for eternal youth, continuing to dream up so many projects that I would never be able to finish them and never have time to grow old. Of course that wasn't rational, but

not all of our subconscious wanderings are. But on close examination, I didn't think I was striving for eternal youth, being painfully aware of my finite life span. Knowing that my time is limited probably continues to make me feel driven to do so much in so little time.

It was that awareness that made me determined to move to Sandwich by the time I was 50. Time was marching on. I calculated I probably had less than 300,000 hours left to live, so I didn't want to devote too many of those hours to keeping AT&T alive and well. One day the company would just have to continue without me.

A more serious concern was the possibility of our changing our minds about the pond after the area was clearcut. The answer to that was simple – we would plant the area to trees again. The area would temporarily look the worse for wear after the clearcut, but soon sprouts would come up and wildlife would be better off. And, with Peter Pohl's help, I could select species of trees that were less likely to blow down.

But what if the excavation site for the pond didn't fill with water because the water table was lower than I anticipated! I decided to dig a test pit to monitor the water table and check the soil conditions at the pond site, choosing a location at the base of the large esker at the northeast end of the pond site. The spot was five feet higher than the lowest part of the flagged area and the digging was quite easy. I first dug through two feet of black muck, then six inches of clay-like transition material, and then gravel for another foot and a half. When I stopped, the hole was four feet deep and I was thrilled. The gravel looked good for road work and the hole was filling with water, the water table much higher than I had anticipated.

I came back a few hours later and found that even in the midst of a very dry spell, the water had filled to within a foot and a half of the surface. After studying the land near the test pit I decided that the water table is high there because rain water seeps through the esker and then travels downhill towards the pond site. That water is filtered by the gravel during its transit, so it is a perfect source for the pond.

So I had done all I could to assuage my worries about starting on a major project that could fail, or result in a pond I wasn't proud of. I was committed that a pond would be there someday, but I certainly wasn't sure when that day would arrive or what the outcome would be.

The pond site was clearcut a couple of years later, during the last timber harvest.

More Preparation for the Wildlife Pond

Access to the wildlife pond site from Erratic Trail was blocked by a ridge of gravel, a small esker. The northern end of this miniature esker connected to the large esker close to Erratic Rock. From the junction, the mini-esker ran parallel to Erratic Trail for a hundred feet and then joined the small esker that was contained within the large esker. Before the wildlife pond could be dug, the portion of the ridge that was close to the road would have to be removed.

The hearing for the gravel excavation permit was held in the fall of 1989. Even though a notification had been placed in the paper, only one person other than myself and the town officials came to the meeting. That person was Clarinda Philips, the new owner of the house we had previously owned. I was surprised and pleased to learn from her that she often went for walks to the gravel site and weeded the seedlings that I have planted. Needless to say, she did not come to the meeting to offer objections to my new project; she was just curious to learn more about it.

I didn't want the removal of that gravel to cause distress to any neighbors because I remembered all too well that one of our neighbors had strenuously objected to the truck noise on a previous gravel removal. The neighbors who would be most affected by construction noise were the Reads, since they were the closest to the pond site. It dawned on me that Bill was the solution to my problem because he used fill in his business and had all the equipment required for the work. His was a small business so he would not create much disturbance with truck traffic. I broached the subject with Bill and he was willing to help in the pond project and use the ridge as a source of gravel for his business.

In addition to Bill Read, John Roberts removed gravel from the ridge that blocked access to the pond site. John and his company used the gravel to upgrade "the road to the back 40" that enabled an adjacent landowner to log his landlocked parcel. So that project improved Mill Brook Trail for free while making the site of Wildlife Pond accessible.

Creation of Wildlife Pond

In 1994, seven years after the pond site was cleared, we were finally ready to start digging the pond! I was impressed with the excavation work that John Roberts had done, plus he had access to the large machinery that is necessary for pond construction – so he was selected to dig the pond.

First John removed stumps from the pond site using his excavator. Having a machine that can swivel in a complete circle, as contrasted with a backhoe that rotates less than 120°, was a big advantage. In under a minute John could dig a stump up from the pond site, rotate and dump the stump, then continue rotating until he was back to where he started, ready to dig another stump. It helped that the trees had been cut a few years ago, causing the roots to be less tenacious. Also, the high water table resulted in the roots being shallow. Sometimes a large stump would slow him down, but not often.

After creating a substantial pile of stumps, John would move his machine to the far side of the pile. Then the process was repeated, moving the entire pile stump by stump out of the pond site. While it sounds time consuming, each time the process was repeated the pile moved thirty feet closer to its final destination. In a half day's time, the entire pond site was stumped, a testimony to John's expertise.

The next step was removing the top soil to save it for future use. When the first pond had been constructed, a bulldozer cleared the stumps and topsoil, with the topsoil and stumps becoming so intermixed that it wasn't practical to save any topsoil for use around the pond. This time, with the more selective excavator, considerable topsoil was saved; enough for the area around the new pond and some left over to upgrade the agility field.

On Saturday, John finished stockpiling topsoil. Some of the time he was helped by his brother Richard, who was a bulldozer wizard. The dozer, which was undersized, was the only weak link in the operation. Given that machine, Richard certainly did a great job. A week later I was able to appreciate how good he really was when I had an opportunity to help out with the dozer and found it challenging. Measuring output in terms of "Richard Units", I was at best a 1/10 Richard Unit.

On Monday, July Fourth, I arrived at the site early in the morning to evaluate the changes that had occurred thus far. A little fawn was checking out the pond site too! When it saw me, it stumbled over debris, and then hurried up the esker to where its mom was probably waiting. Also during the pond construction we frequently saw moose footprints first thing in the morning, and once some bear prints. The neighborhood wildlife

was obviously checking out what was going on in their woods, critters after my own heart, telling me it was a great site for a wildlife pond.

When work resumed on Tuesday, a second excavator showed up. John had enlisted the help of another excavator, considerably bigger than his machine. The two machines were obviously able to dig the pond faster than just one, but they could do it more efficiently too since one machine could pass material to the other thus reducing movement of the machines.

Watching the machines work in tandem was like watching ballet. The big machine, which could scoop up twice as much as the smaller excavator, would deposit its load in a common work pile. Then the smaller machine would take from the common work pile and move the material to its final destination. The smaller machine would do this one more time before the big one deposited its next load. The fact that the big machine could hold twice as much as the little one was compensated by the little one (operated by John) working twice as fast. If both machines had ever accessed the common work area at the same time, their buckets would have collided. But during the entire excavation of the pond I only saw the buckets touch once, and that contact was so slight that they never missed a beat in their synchronized digging.

During the last three days of excavation, gravel was hauled to the edge of the field so it could be enlarged. My job was to spread the gravel as it was delivered, using my backhoe. For the first hour there was no problem, but as the fill got deeper, it was too wet for the backhoe to maneuver in. I finally had to admit defeat. Fortunately, the bulldozer that had been used to strip topsoil was still at the construction site and since Richard Roberts was at another job site, I was given the opportunity to use the dozer.

I learned that the brakes were used to steer the bulldozer. Braking the track on the left side of the dozer would turn the machine to the left and the right brake was used to turn right. A lever moved the dozer's blade up and down analogous to how I moved the backhoe's front bucket. Sounds simple in theory, but in practice there was more to it than met the eye. It took a while to know how large a pile to push, how much throttle to apply, how to jounce the dozer's blade to facilitate movement.

Before long I fell far behind the schedule dictated by pace of the two dump trucks. Then I would flag one of the drivers to take over the dozer operation until we were caught up again. I was happy when Richard arrived later to take over the bulldozer responsibilities. It was fun to use that machine, but it made more sense for the expert to run it.

Being relieved of my bull dozing responsibilities gave me an opportunity to arrange rocks. Julie wanted the large rocks from the pond excavation used to provide a border around the agility field. These were hauled by truck to the field's edge where they were dumped. Spacing the rocks with the backhoe was a fun job. Even though some of the rocks were more than three feet in diameter, the backhoe had no problem with them.

By the end of Saturday, the digging of the pond and spreading of gravel was complete. John came back the following week to rearrange the gravel on the far side of the pond, but the gravel pile was still too wet to work, so he came back a couple of months later. During the intervening months, I used my backhoe to finish spreading material at the agility field extension. It was an iterative process – I kept making changes until the site seemed right. Downpours would demonstrate that an area didn't drain properly and after a few days of drying, I would be able to work the area again. By the

time I had achieved the desired result, I had raised one side of the area a foot and lowered the opposite side a couple of feet.

Watching Wildlife Pond fill up over the next few months was exciting, not knowing how deep it would become. I knew the area was wet, and wondered how much the water would leak through the embankment. But fortunately, the clay mixed in with the gravel made the embankment non porous and it held water very well. And just as important, the gravel on the opposite side of the pond, where springs feed the pond, was virtually clay free − letting the ground water easily enter into the pond. To enhance the pond even more, most of it was over ten feet deep which would help minimize weed growth. The pond site really was ideal. My goal was beautifully achieved. Certainly, the setting for Wildlife Pond was created by nature, I just rejuvenated a little of the larger pond that once was there.

WOODLOT PHILOSOPHY

For much of my life I have had a philosophical bent. I wrote a paper in high school pondering the possibility that I was actually alone on this earth and my acquaintances were figments of my imagination put there so God could test how I would react in various situations. My teacher responded by noting on the paper that my grade was really there, I just couldn't see it. I never did learn what his evaluation of the paper was!

In this chapter, I have collected a few of my philosophical meanderings that have occurred during my time on this property. Some of these pieces are quite philosophical in bent, with only loose ties to nature; while others are closely tied to nature with only loose ties to philosophy.

A little Piece of Infinity

My forestry education benefited wildlife, but was also part of my continuing philosophical evolution. In my late teens, I became more aware of the finiteness of life. Being a realist, I had long acknowledged the fact that some day I would die, but it took a little maturity to appreciate the implications of death.

I believe that life is meaningless if there is no God and we have no souls. If after death we vanish into nothingness, then from the self's point we have never existed. After my death some may remember me for a short while, but eventually those individuals will perish too. Whether eventually is a few years or thousands of years is irrelevant. If your imagination wanders far enough into the future, all traces of your existence will be erased from this earth. If you travel even further into the future, our sun will exhaust its fuel supply and cease to shine. Billions of years later our galaxy, the Milky Way, may collide with another galaxy and become unrecognizable.

If there is a God, we can hypothesize all sorts of afterlives, believing that one can live forever. But when the Doubting Thomas in me is not sure about the existence of God, I must confront the possibility that my life, in fact all life, may be meaningless. Finally I concluded that whether or not God exists is well beyond my sphere of influence. But to help give meaning to my life, I live it as if there is a God, there is a soul, and there is a life eternal.

This philosophy influences my relationship with our Tree Farm. Much of the work I do here will have effects long after I am gone. Yes, the next ice age may erase all traces of my feeble efforts, even obliterating the pond I caused to be built. But that again is something I cannot control. At least I can influence *some* of the future characteristics of this land. And this in turn can influence the lives of those who come here after me. If each of us does our small part in leaving this planet a healthier place, then our successors will remember us with respect.

What the World Needs Now is More Trees

Lord we don't need more people, they damage the environment enough already. But we could use more trees!

An environmental activist came to my house soliciting money and asked what I thought was the number one environmental problem facing us right now. My response was "too many people". I was disappointed to learn that she had never had such a response before.

True, if we conserve our resources better, use more biodegradable materials, etc., we can help to start restoring this world's environment. But, if the population doubles approximately every thirty years, then the average garbage production of each person must be halved just to keep the status quo. For every percent that the population increases, the garbage production must decrease or we will end up buried by our trash.

Similarly, an increasing world population makes it difficult to reduce the pollution of the waters and air. Many of us consider the increasing amount of carbon dioxide in the air as a type of garbage. I, for one, think this gas acts as a blanket over the earth, causing the average temperatures to rise. Even if you don't believe humans are responsible for global warming (there are still members of the Flat Earth Society too!), you probably do believe people have the ability to change the temperature of the planet. Well, if the average temperature is rising, as evidenced by the increase of the world's global average temperature, wouldn't it benefit most people to help fight this trend? Selfishly, I wouldn't mind the winters in New Hampshire warming a little, but being selfish is something we should try to rise above.

But I keep digressing. Finally, I will explain why trees can help ameliorate global warming. Trees remove carbon dioxide from the atmosphere, fighting the greenhouse effect. So those of us who are managing our forests to create more standing timber are helping to store carbon dioxide in the vertical position, and letting the fallen trees decay stores the CO_2 in soil as well as the organic material.

As an engineer working for AT&T / Lucent, I took pride in the thought that my contributions, in a small way, helped people to communicate better. Well, as a Tree Farmer, in another small way, I am helping to make a better environment. And as time goes on that seems to be a significantly more important contribution. What good are better communications if the message they bring is that the environmental sky is falling?

Even when I am not there, our Tree Farm helps to wage the battle for clean air. Certainly one little piece of woods does not make a much of a contribution. But add the contributions of all the Tree Farms together and then we have something that is important. And if we spread the word throughout the world that tree hugging can be a gratifying way of life, we might get not only more trees, but also help people to be more sensitive to the environment.

Skinny Dipping

A nice feature of having your own secluded pond is that you can go skinny dipping. I had long been convinced that it was nicer to swim with no clothes on, doing it by dark of night as a teenager at Cobbetts Pond. However, the conventions observed by our society usually make a bathing suit mandatory when swimming. But at our pond I can ignore those conventions and swim au natural, which I do more often than not.

Most of my friends are more inhibited than I, so in deference to guests I don a bathing suit. And my neighbors are used to my idiosyncrasies by now so when approaching the pond in swimming season, they make sufficient noise so I can either dress or get to a suitable depth in the water.

I used to worry about a stranger coming upon me by surprise, but I slowly developed the philosophy "it's our pond and they are the ones who should be upset about being discovered trespassing." Now, getting bolder with age, I frequently work around the pond with no clothes on. Actually that's not quite true – I wear a hat to protect my balding head from the sun.

Brush Burning

During the spring of 1988 I took a business trip to Sacramento and stayed over the weekend so I could continue working at a telephone office the following week. With a free weekend I decided to drive to Yosemite National Park, four hours away. What fun it was to look at a forest so different from what I was used to! The sequoias were so impressive and I was in awe walking through the tunnel that went through the trunk of one of the behemoths.

One interesting fact I learned at Yosemite was that in the dry climate, fallen sequoias can take hundreds of years to rot! Then fire becomes a necessary ingredient for keeping too much debris from accumulating on the forest floor. Until recently, man always tried to intervene and stop forest fires. That allowed so much debris (added fuel) to accumulate that subsequent fires became uncontrollable and much larger than would have naturally been the case. And unfortunately, the flames from a large fire damage older sequoias that otherwise would have been able to resist smaller fires. So now in order to keep the forest debris from reaching critical mass, forest fires are often allowed to burn themselves out, cleaning off the forest floor once again.

In the Northeast it is usually not necessary to resort to letting fires clear out forest litter. The moist climate allows wood in contact with the soil to rot before there is much accumulation. But, on occasion, I have burned brush on our property to clear it away. To get a permit to burn brush in the state of New Hampshire, one of the following conditions has to be met: the ground must be snow covered, it must be raining, or it must be after 5 PM and before 9 AM. These restrictions decrease the odds that fires will get out of control. Snow covered or rain wet ground will deter the spread of fire and between 5 PM and 9 AM there is usually little wind and the humidity higher. Also, more volunteer firefighters are available! But in times of high forest fire danger, no permits are issued for brush burning.

Most of my brush burning was around Big Pond, because that was near our house site and we didn't want to leave piles of brush there. Some of the brush was burned in piles and some in evening camp fires. The brush pile approach was the most efficient, but the camp fire approach was the most enjoyable. There is something pleasurable about sitting around a camp fire that seems to have been bred into the human species, probably dating back to cavemen days. It's a pleasant way to relax at the end of the day and a good way to prepare a meal. That was how we prepared all our evening meals before we had electricity in the barn.

Does brush burning or heating a house with wood add to the carbon dioxide that is in the air, contributing to the greenhouse effect? Just as with many things, burning wood in moderation is OK. It certainly does release CO_2 into the air, but some of the carbon dioxide will be removed again by plants in the process of photosynthesis. As long as our wood burning is of small enough scale that it doesn't reduce the amount of biomass in our woods, then there is no net effect on the greenhouse effect. But to the contrary, if we heated our house with a fossil fuel such as gas or oil that would increase the greenhouse effect. Those non renewable, non growing energy sources are not in equilibrium. They are being depleted and the net result is more CO_2 in the atmosphere.

As time has passed and the global environment has deteriorated, I no longer settle for just having our woods being in equilibrium. In too many parts of the world, rain forests are being burned. To help do our small part to offset this problem, we now seldom burn brush. Instead, I create brush piles that will eventually decay and add nutrients to the

ground. As the topsoil increases, the carbon is stored in the soil, not burned and released as carbon dioxide into the air. And while the brush pile is slowly decaying it provides a home for wild life including a noticeable increase in our rabbit population.

Tree Farmer's Workout

This section had its genesis while I was having my favorite morning workout. Heather and I were at the barn for the weekend and I was up at my normal 6:30 AM while she slept until 8. My workout wasn't on a Nautilus Machine or an exercise bicycle, not even jogging. While those forms of exercise can all accomplish their ends, a fitter body, I don't find them satisfying. When I find myself exercising just for exercise's sake, my analytical self usually intrudes and asks whether or not I could direct that energy to a task that would benefit my body and accomplish something else.

At one time when I lived more than ten miles from work, with most of the trip over relatively uncongested roads, I would ride my bike back and forth to work, have a great aerobic workout and relieve mental tension. Plus I was saving money on gasoline by not using my car as much. That was almost nirvana. But in 1988 I lived further from work, and most of the trip was via superhighways, so bicycling to work was no longer practical. Noontime walks helped to fill some of the bicycling void, but weekends provided more opportunities.

On this particular weekend, gathering firewood was the exercise activity. To be specific, I cleaned up some debris that had been left from a tree harvest. Ah, the practical person's paradise: firewood there for the picking, beautification of the area, and an opportunity to satisfy a primeval craving, attaining a source of heat, PLUS all that great exercise! Little wonder why we live in the woods and heat our house with wood. I can live on my investment, be an active participant in the challenge to improve our environment, satisfy my need to live in harmony with nature, and as a byproduct, get all the exercise I need. And I enjoy this kind of play even more than my computer play.

When I had the above thoughts in 1988, I lived in the suburban woods of Kingston, New Hampshire and commuted daily to work at Bell Labs. Now I live in the more remote woods of Sandwich New Hampshire and am retired. No more forty plus hour a week job. I have plenty of time to care for the woods AND to take bike rides. But life is of course not perfect, and even though I am now at the retired phase of life, there are spells of rainy weather that dampen my enthusiasm for a bike ride. So now there sits an exercise bike in front of the TV. The boredom of riding that bike is assuaged by entertainment. Maybe I should connect the exercise bike to a generator as yet another small step to improve the environment! Not a chance! I have managed to put some controls on my workaholic tendencies.

The Secret Life of Richard Daniels

As a high school student I read "The Secret Life of Walter Mitty", a short story about a man unhappily married to a shrew. His secret life was inside his head. Often when his wife was harassing him, he would escape into his private thoughts where, instead of being a meek henpecked husband, he was something quite different.

Like him, when I drove to work in the heavy traffic rat race, I often escaped the hectic pace by thinking about the Tree Farm, either enjoying the woods as they presently were or, more likely, planning what to do there when I had the time − the next weekend when I returned, or in a few years when we lived there. Also, if I relaxed and flowed with the traffic, it was a good time to continue composing this book.

Business trips often caused me to be away for a few days at a time and a portable computer went along since it was part of my test equipment, which enabled me to work on the book in the evenings at the hotel. It gave me a good feeling to do something I considered constructive instead of watching TV. If I couldn't work in the forest, I could at least work on the forests's book.

The Omnipotence of Trees

In 1989 Julie, Heather, and I flew to the Pacific Northwest for a two week vacation, most of the time camping in National Forests. Twice during that time I felt almost as if the trees were communicating with me. I was so small and they were so "everywhere". The best way I can find to describe my feelings is to refer to the omnipotence of trees. These experiences helped give me further insight into why I am a Tree Farmer.

I first felt the awe during our stay at Samuel P. Taylor Redwood Park in northern California, camping amongst the redwoods. Our campsite alone had six huge redwoods four-plus feet in diameter. As I walked about the park, I felt a tingling in my bones. Those aged giants communicated the life they have experienced over the centuries. I felt a reverent hush in that peaceful setting, similar to that experienced in a cathedral.

That was a wonderful introduction to the forests of the Pacific Northwest. While I had expected beautiful forests, I didn't anticipate being frequently surrounded by so many stately giants. My second encounter with the omnipotence of trees was on a hike to Soleduck Falls in the Olympic National Park in Washington, an area of rain forest. A thick carpet of moss covered the ground and the forest appeared to be in virgin condition with no evidence of trees ever having been cut, except for some which had fallen across the trail and required removing,

The rain forest blocked traffic noise at Soleduck Falls and the moss carpet also acted as a sound absorber. I hiked early in the morning and felt the solitude strongly. Instead of my normal aerobic walking, I found myself walking quite slowly, the slow pace allowing me to absorb the peace and strength of the forest.

After I wrote down my thoughts at the car, I decided to go back into the rain forest to commit my visual impressions to memory. After following the trail for a while, I headed directly for the Soleduck River. My adventure rewarded me with a relatively easy access to the water's edge. I rock-hopped to the middle of the river, and stood quietly for ten minutes, absorbing the beauty that surrounded me. Then I quietly sat down and immediately noticed some movement upstream. There, by the edge of the river, were three deer. One noticed my presence, but I remained still and he accepted me.

The deer nibbled some breakfast, then walked into the swift water, stopping some thirty feet from me. The sole male continued to occasionally eye me cautiously, but the two females seemed oblivious to my presence. While two stood on a rock, the third took a brief swim, shook herself off, and then joined the others on the rock. Refreshment period over, the deer waded to the shore again and nimbly climbed the steep banking, disappearing into the undergrowth. What a thrill!

I was very grateful to the Pacific Northwest for the feelings of awe and reverence it transmitted and I carried the feelings to our Tree Farm. Although our woods will never rival the rain forest for number of giants per acre, they can still be a spot for communication with Nature. My desire to nurture the woods and encourage our own large white pines was reinforced.

My walk on that well maintained, but unobtrusive rain forest trail will certainly influence future trail work on our Tree Farm. Some trails still need be of sufficient size to be used for dragging logs; but other trails, such as the one on the top of the esker, can be constructed so as to enhance communion with Nature.

How to Perpetuate the Tree Farm

When I bought the land, 160 acres did not seem like a large parcel to Bob Lloyd, the realtor. In any given year his agency would sell many larger parcels, but fifteen years later a 40 acre parcel seemed large. As the price of land increased, the temptation to subdivide and make a profit became irresistible to many people.

Would we resist the temptation? Would we succumb when Heather needed money for a college education? Or as we grew older and less active, a second home in North Carolina might appeal to us. And if we didn't succumb, what about the owners after us? Such thoughts made me want to protect the land so that it would remain undeveloped. As world population increases, it becomes even more important to insure that woodlands survive.

One of the possibilities we considered was to put our land into current use. Current use legislation was passed by the New Hampshire Legislature in 1973 to aid land owners who were forced to sell tracts of land due to rising real estate taxes. In order to partially compensate the towns for reduced real estate tax revenues, it was stipulated that any land removed from current use would incur a penalty of 10% of the value of the land. It was further stated that land could be taken out of current use only when it no longer met current use criteria; i.e., when the current use changed. The most common reason land is removed from current use is because of construction. For example, when a house is built the town will require that a house lot, perhaps two acres, be removed from current use. If the value of that house lot is $50,000 then the town would be owed $5,000.

This law helped many people keep their land. But before a landowner puts his land into current use to receive the tax advantage, he should weigh the benefit against the disadvantage of the 10% penalty if the land use changed. A logical question I asked myself was, "How long must the land be kept in current use in order to compensate for the 10% penalty if the land use changed?" I wrote a computer program and developed the following rule of thumb. If my real estate tax was greater that 1.5%, then changing it to current use made sense as long as I planned on not changing the land use for at least ten years.

I felt confident that we would not want to sell any of our Tree Farm within the next ten years, so we met that criteria. However, fortunately for us, the Sandwich tax rate was less than 1.5%, so I concluded that it would not be sensible to put the Tree Farm into current use. The tax savings would not adequately compensate us for the possibility that we would someday want to sell part of the land.

Years later, we placed a conservation easement on the land to insure that neither ourselves, our heirs, nor whoever eventually owns the land, could subdivide the land and build more dwellings to infringe upon the forest. The Tree Farm could live on forever (or at least until the next ice age rearranges the esker).

Conservation Easement

When I was first putting trails on the land, I was often conscious of the possibilities of a housing development. In fact, I initially considered the purchase of the land as a predominantly financial investment. As time progressed, those thoughts faded to

be replaced by a desire to protect the land from development, especially the esker which gives me a primeval feeling when I'm hiking it. This work of nature deserved protection from people greedy to transform nature's gifts into money.

The Tree Farm has become part of me and I a part of it. It gives continuity to my life and even helps make me feel immortal. I will die, but the work I have done to improve this land will live on, hopefully to be appreciated by wildlife and people for centuries to come. I wanted to protect the land, to keep it from being plundered for fleeting future financial gain. But how?

A variety of legal options existed that could be used to protect the land "forever". We chose the option of establishing the land as a conservation easement that would limit its future development. The land can still be lived on, sold, or left to heirs who may in turn live on it, sell it, etc. − as long as the specific restrictions stated in the easement are not violated. One of the requirements on a conservation easement is that the land must have features worth preserving for the betterment of society. In the case of our Tree Farm, the esker was a special geological feature that was worth protecting.

When a conservation easement is created, it should be given to an organization that will do its best to monitor the property and make sure the easement is not violated. Giving an easement to a charitable organization is akin to giving a gift, it can save on taxes. The tax savings result from the fact that the easement limits the future use of the land, reducing both the value of the land for prospective buyers and for local real estate taxes. When a conservation easement is given to an organization that meets certain criteria, the federal government also considers it a gift and the value of that gift can be used to reduce federal income taxes.

The *permanent* feature of conservation easements was scary. What if unexpected expenses required more cash than we had available? We could be forced to sell all of our Tree Farm if we could not subdivide and sell a smaller portion. Or Heather might want to build a house on the land sometime in the future.

But fortunately, often conservation easements can be tailored to specific needs. We felt it best to reserve the right to sell two house lots in the future. Reserving that right made the conservation easement less valuable, so the tax reduction was not as great as possible. But the restriction gave us piece of mind since we weren't sure what the future would bring.

A common misconception about conservation easements is that the public must be allowed to use the property. In some situations that would be true. For example, a parcel may be deemed worthy of an easement because of a beautiful view it possesses and not allowing the public to see that view would not be in the spirit of the easement. In our case, the overarching purpose of the easement was to protect the large esker. We choose not to have public access written into the deed, so were left to choose how much access to allow. So far, we have been thrilled to let anyone walk our trails and enjoy the experience, but if members of the public misuse that trust, causing damage to the land, then access can be denied.

The organization that we chose for the conservation easement was the Society for the Protection of New Hampshire Forests (SPNHF). We had been members of that organization for years and were impressed with the work they did. They help protect New Hampshire land by accepting conservation easements, own parcels which they maintain as demonstration woodlots, and provide educational services to help foster a conservation ethic.

In 1995, Catherine Hahn of the SPNHF, walked the land with us and shared our appreciation of the esker. She agreed that it would be wonderful to be able to insure that it remain unspoiled. As our representative, she presented our case to the SPNHF who agreed to accept a conservation easement on our land. She then took their standard easement contract and crafted it to meet our particular objectives.

Bill Read helped to determine the volume of the gravel that was in the esker, a detail needed to find the gift value of the conservation easement that could be used to reduce our taxes. Bill and I took a series of measurements allowing us to determine the cross section area of the esker at fifty different locations. I wrote a program that took the data and characterized the esker. The calculations yielded that the esker contained 204,667 cubic yards. The amount of gravel may have been as much as 250,000 yards, but I wanted a conservative number in case of any tax audit. We found that the esker was 2375 feet long and averaged thirty feet high with a base dimension of 150 feet. They don't build them like that any more, except perhaps in Alaska.

Robert Lamprey, a professional appraiser with expertise in valuing conservation easements, used the information about the esker to determine the theoretical reduction of property value from prohibiting future gravel excavations as well as the reduction from limiting future development to two house lots. Then the conservation easement was finalized. There was no turning back! The property with its esker was permanently protected and would always have be a place that would be enjoyed by animals and people alike. It should help make the world a better place.

Black Holes and Genesis

In response to a 2004 email from my cousin Anne Maynard Bowman, I almost started a family feud. Her email was political and diametrically opposed to my feelings, and I felt an obligation to have her email list see the other side of the issue. One of the respondents to my too heated flame was Patrick Maynard, a first cousin once removed that I had never met. Our initial hostility was eventually replaced by respect for the other's beliefs, if not acceptance of those beliefs. We proceeded from the flammable topic of politics to religion, an equally challenging subject when it comes to rational discussion.

On neither topic did one of us win a convert. But this is my theory which I shared with Patrick.

I was very serious when I implied that the Big Bang is my Genesis. And I don't think it is at odds with the Bible. In fact, if the Bible is right and the Big Bang is also correct that logically has to imply there is no inconsistency! And I do happen to think there was such a thing as the Big Bang, just as I think there is such a thing as a black hole. Isn't the Big Bang the theory that out of pure energy came all matter? That seems very God-like to me.

Pondering the Big Bang is consistent with pondering the genesis of this property, what shaped its condition prior to my purchase, and what will become of it after my stewardship. The conservation easement will help shape its future for a long time, but not forever, as nothing physical is forever.

FAVORITE MEMORIES

Favorite memories are another way of learning what motivates an individual. Continuing in the philosophical bent of the previous chapter, I have collected some of my favorite memories about my life in the woods.

Aerial Acrobatics

One day in 1985 I was in the back of my pickup, closed in by the cap, making quite a racquet as I slid some heavy concrete-weighted volleyball net supports out of the truck. Strangely, the noise kept getting louder beyond all reason. When I stopped pulling, the noise became deafening. I jumped out of the truck just as a jet fighter swooped over the truck and then the pond, not much more that a hundred feet above the surface, followed closely by a second jet. They came back again, this time flying side-by-side over the pond, one breaking away to the left and the other to the right – doing rollovers as they went!

I knew that in the autumn some fighter jets trained in the White Mountains, and had occasionally heard them in the distance, but what a thrill this was – my own private air show.

Some people object to the jets disturbing the tranquility of the mountains and certainly, if you are on a hike in a wilderness area, being dive bombed by jets probably isn't on your agenda. And the noise may terrorize wildlife, disturbing their reproduction. Over the years, our close encounters with the jets have been few and far between, random enough so they are always a pleasant thrill. I would guess that it's also random enough for the wildlife and yields no measurable effect on the environment.

Stuck During the Mud Season

On April 30, 1993 I took some spalted birch to Clarinda Philips who made intricate little boxes out of wood that was stained with age, as the birch had been. She suggested that we go for a ride to see an interesting house with its small pond, knowing my interest in ponds. We drove in my car down Pease Hill Road. Clarinda mentioned a short cut that we probably shouldn't take because there was a Closed for Mud Season sign on it. In Sandwich and Tamworth there are probably more gravel roads than paved roads. Most of the gravel roads are open year round, but some are too challenging for winter use.

Since I knew how dry our woods roads were, I told her they probably just hadn't gotten around to removing the sign yet – big mistake! I almost got stuck going down the hill and then did get stuck at the bottom. I decided to jack the front passenger tire up so we could put material under the wheel which was deep in the mud. Clarinda brought some good sized rocks to put under the jack and branches to help form a corduroy road. As we worked, we found that the mud was more than two feet deep. Dusk was falling and getting ourselves out before dark didn't seem likely, so we gave up trying and walked down the road for help. We came to places where the road was even muddier. It was obviously it impossible to get out by driving further down the road, even if we did find someone to tow us out of our current quagmire. The car would have to be towed back up the hill, but not tonight.

After walking a mile we came to the end of this challenging gravel/mud road, and came to a road that was driveable. Another mile brought us to a lighted house, but it was

only lit up to look occupied. Finally, we were able to flag down a couple with small children who were out for a ride. They volunteered to bring us home and as soon as I got home, I called my buddy Len, explaining my predicament. He suggested hiring a tow truck, but I doubted that a tow truck would be able to pull the car up that muddy hill. The next best hope was that Jaws would be able to come to the rescue. We set a date for 8:30 next morning when I would drive the backhoe to where the car was stuck, and Len and his dad would drive over in their car to help.

That night I slept OK at first, but started worrying at 4 AM. What if Jaws ran out of diesel fuel? Could the backhoe even get me out? Was the car damaged beyond practical repair? I do my best worrying in the middle of the night! Before leaving the next morning, I got some diesel fuel from Bill Read, and then drove the backhoe to the mucky scene which was three miles away. Since the backhoe was unregistered and uninsured to be on public roads, I was nervous about being pulled over, but kept telling myself any policeman would be understanding considering the circumstances. Fortunately, the ride was uneventful.

Once there, the situation was as bad as I remembered. Len agreed that a tow truck would be unable to make it up the hill and we both worried that it was too much of a challenge for Jaws. From my vantage point in the backhoe, it looked as if we were back-dragging that muddy road with the Subaru as we inched back up the hill. Back-dragging is usually done by driving a backhoe or bulldozer backwards with the bucket lowered to smooth a rutty road. Well, I can report that dragging a car can produce a similar effect, but do not recommend it! Once one of the car's wheels froze and refused to spin, but we were able to get it to spin again by washing the mud out with water from a gallon jug that Len had the foresight to bring.

Even though the mud was deep and the hill was steep, Jaws was awesome with her 4-wheel drive and big wheels. When we made it to the top, we congratulated ourselves, then Len drove my car, his dad drove the other car, and I the backhoe. When we all met back at the ranch, Len said, "*Let's do it again*." It had certainly been an exhilarating experience, but not one that I ever planned on repeating if I could help it.

Canada Geese

During the summer of 1993, eight Canada Geese arrived on our pond. We left them alone for half a day, watching wildlife enjoying our facilities. But we knew that we didn't want them as long term guests because their droppings around the pond would not only be unsightly but could pollute the water.

When the time came to say farewell to our guests, they didn't want to leave. Julie had gone for a weekend competition with the dogs, so it came down to just people against the geese. Heather, her friend Katie Read, and I tried in vain to make them feel unwelcome. Chasing the geese in a canoe didn't faze them; they just flew to a different part of the pond. Fire crackers couldn't convince them that they were being shot at. Finally we resorted to throwing rocks. Over the period of an hour we managed to score 7 hits, but still no geese left.

Finally, while they sunned themselves in victory on the hillside above the beach, I slowly approached and was able to herd them up the hill away from the pond. One got separated from his brethren and called plaintively. But by then I had the main group past the house. They flew back to find the straggler, he joined them, and they all finally flew away. I have never been happier to see geese overhead where they belong.

A Trophy Moose

On October 6, 1993 I arrived home from working at AT&T at 5 PM, had a snack, then asked who wanted to accompany me on a walk. Julie was busy getting her equipment ready for a week's dog training camp in PA. Heather was busy doing a book report. But me, I'd been busy enough, and it was time to go for a walk and unwind.

I walked Erratic Trail to continue exploring the route of my next trail. As I walked on the crisp dry leaves I thought, *No hope of seeing wildlife today, I'm making way too much noise*. But I was wrong! Less than a minute later, motion ahead of me caught my attention and I saw the flag of a Whitetail Deer bounding off the trail and into the woods. I was surprised to see how long the white tail was, seeming more than a foot. I decided it might help them follow each other as they ran through the woods. It certainly helped me follow his flight. Hearing more noise than would be explained by one deer, I scanned to the right and saw a second deer following the other.

After exploring in the woods for a while, I started home for supper. Then I heard a loud noise in the distance, my first thought being that someone was shooting. After a couple more loud noises, I realized it was not someone shooting, it was more like an ax being struck against a tree. Continuing on my way, I analyzed the situation. The sound was coming from woods that were south of our boundary and it was highly unlikely someone would use an ax there because that area had been logged a few years ago.

Suddenly I saw a large brown object move! Then it all made sense, a huge bull moose was hitting his antlers against trees, trying to impress a cow, and soon I saw one nearby. I hadn't been seen yet, and wanted to get closer to observe what they were doing. I tried to restrict my motion to when he was making noise, but that was not always possible. I lost sight of them as they blended back into the trees. While walking towards the area where I had seen them last, I considered what could happen if I was charged by a moose. I could be killed. But the same is true for rock climbers or sky divers and it doesn't stop them. The probability of a moose doing me harm seemed small enough so that it didn't deter my tracking them, but it did add to the sense of adventure.

From past experience I knew that the sound of a voice doesn't always scare moose away, but can make them curious. Bearing in mind that Julie thought my "Here, Moosie, here, Moosie" while videotaping a previous moose encounter was not very sophisticated, I tried "Yo, Moose" a couple of times. I heard no rustling of brush to indicate that my welcome had been noted. Then I saw the cow again, close to where I saw them originally. Next I saw the bull and part of his massive antlers. I walked closer, and knelt by a fallen log to get a better view.

After getting a good view of him, I could tell that he was not I had videotaped a few days before. His antlers were bigger. And he was staring right at me. That plus his posture I interpreted as threatening. Thinking that he might view me as trying to steal his woman, I said, "OK I'm leaving", turned and walked away. Fortunately he was willing to peacefully watch my retreat.

The next morning, while admiring the fall foliage out the kitchen window, I saw a moose crossing the lawn. His was big and his antlers were massive, probably the same moose I had seen the previous evening. I rushed to get the video camera, and was able to record him very briefly as he went out of view in the woods to the north of our house.

Hearing a car slow down, I realized he must be visible from the road so I followed his route through the woods and looked up and down the road but saw no moose. Knowing he had crossed the road, I entered the woods on the far side of the road and

came to an old cellar hole that I had seen a long time ago. I paused to admire it again, then heard the moose crashing through the woods. Not that he was running that fast, it's just difficult for a large animal like that to be stealthy.

Following the sound, I occasionally caught glimpses of him, but didn't seem to be gaining. So I detoured over to the logging road that is used for the Sandwich 60 Dog Sled Race, then ran up the trail to try to cut him off. When I stopped to listen, there he was a couple hundred feet from me. I was breathing heavily from my pursuit, which caused the camera to shake. (I know what you are thinking, but I still claim it didn't shake from fear). I finally was able to locate him through the camera's telephoto lens and was thrilled to see that he was walking towards me, in fact he was coming straight towards me! It was obvious that he saw me – he looked directly at me with his ears pointed in my direction. As he approached, I realized how vulnerable I was. If he charged, there were no nearby trees to hide behind. It would have been futile to try to dash for shelter.

I felt as if I were on a thrilling amusement ride and thought, *there's no getting off now, have to take this ride to the end.*

When the moose finally stopped his advance, he was less than twenty feet from me. He turned away and examined the hemlock trees for possible food, but even when he turned his head his ears still pointed in my direction. Past fear, I was able to take some terrific video of him. It was fascinating to see him duck under a tree branch as he slowly approached the trail. His large set of antlers did make travel difficult.

When he reached the trail he was still quite close to me. I turned slowly to be more comfortable while videoing, but turning made the gravel crunch and he bolted at the sound. For such a large animal, his acceleration was impressive. When he was back in the protective woods, he slowed to a walk and slowly disappeared.

Heather Learns to Drive

I enjoy teaching and during my career at Bell Labs I had a number of opportunities to teach seminars, courses for fellow employees, and even college courses at Tennessee State University as part of a year long affirmative action program. I like to think I have a talent for reducing complex subjects to simple concepts and then teaching them in a logical and interesting manner.

It's especially satisfying to teach your own children. When Heather was ten years old, I started teaching her how to drive. As a first step, we drove the riding lawn mower to the agility field and back. That was a mile roundtrip, and all over our own roads. At first she just sat on my lap observing how to steer, but soon she was steering and finding it was quite easy. A lawn mower is a good initial step in learning to drive because it can go only so fast, has responsive steering, and you can easily see which way the wheels are heading. By the end of that year Heather was driving the lawn mower by herself with no problem and she loved it.

The following year Heather progressed from driving the lawn mower, to using it to cut the grass. After a few practice sessions to develop her cutting strategies, she was given the paying job of cutting the agility field. I had a lot of fun watching Heather work and quite often told her it wasn't right for her to have so much fun working!

Once you can drive a riding lawn mower, it's a very small step to learn to drive a car or truck and our Tree Farm was a perfect place to learn to drive. Erratic Trail, Mill Brook Trail, Glacier Trail, and Blackberry Lane were all great roads for practicing without

worrying about oncoming vehicles or pedestrians. And since they were on our property, it was irrelevant that Heather didn't have a license.

In the summer, Heather took the next step and learned to drive our old woods vehicle, a Datsun pickup truck which was affectionately known as the Stone Pony. The truck's name came both from the fact that it had been used to haul many stones during my road building projects. Also, Linda Ronstadt was my favorite singer, and her early group was the Stone Ponies.

Again, Heather's learning to drive the truck was a fun project for both of us, great for father-daughter bonding, and perfect for a young girl's self confidence. After all, how many eleven year olds were allowed to go driving alone. Of course, before Heather was allowed to solo, there were lots of practice sessions. Often I would suddenly cry out, "Heather, watch out for the moose!" It was her job to stop as rapidly as possible to help develop her reflexes.

For that matter, how many eleven year olds have their own truck, a standard shift at that? In mid summer, I decided that the Stone Pony should be replaced since its bed had rusted so badly that stones kept dropping through the holes. When I bought my replacement woods vehicle, I officially gave Heather the Stone Pony. The next week when I returned from work, the truck was painted with graffiti. My favorite was, *"They wouldn't give me a horse, so they gave me a Stone Pony!"*

Sledding Behind The Truck

Stone Pony's replacement was a full size pickup that was too difficult physically for Julie to handle, let alone Heather. I got used to "Old Paint", and thought she was a great truck, but Julie thought the truck was dangerous. That might have had to do with the fact that the emergency brake didn't work and once the truck slipped and almost hit her!

When I came across yet another woods vehicle for sale, I suggested we use it to replace both Stone Pony and Old Paint. If the entire family could drive this replacement, it made no sense to keep its predecessors. But since the Stone Pony belonged to Heather, she had veto power. If she liked the new-old truck, then we would jointly own it. We went to look at the truck together.

The 1983 pickup was also a Nissan (same company as the 1979 Datsun Stone Pony, just the brand name had changed). It had some rust, which was OK with me because by my definition a woods vehicle is one that's not in good enough shape to be used on public roads. So for $400 we got a king cab, 4-wheel drive pickup that did not look as if it were ready to fall apart.

Julie, Heather, and I all learned to love the new old pickup. We hadn't anticipated how good the truck would be in the snow, going through six inches with no problem. We had great fun using it to pull sleds, taking turns, one driving and the other two being pulled on separate sleds.

I planned to reduce our truck inventory in the spring since by then we had five trucks – a registered Ford Ranger and four other unregistered trucks: the Stone Pony, Old Paint, Big Bertha (the dump truck), and the new old truck. And even though I'm not a competent mechanic, they were all in running order. Why am I surprised that my son Rick seems determined to beat my truck-owning record?

Camping Over Mill Brook

In the late spring of 1994, when Mill Brook was still engorged from the spring rains, I walked over Mill Brook bridge and had a epiphany moment. The bridge would be

a great place to camp. At dusk, Heather and I brought out a tent and sleeping bags to spend the night there. The mosquitoes were ferocious, so we set the tent up on the bridge as rapidly as possible, unzipped the door, threw in our gear, and tumbled in ourselves. Only a few mosquitoes made it in and we ruthlessly wiped them out.

What a wonderful place to camp! The water babbling under the bridge was so relaxing. It seemed strange to hear the sound directly under us, but we both enjoyed it. We thought about what would happen if a disgruntled moose found himself blocked from using the bridge in the middle of the night, but the prospect didn't cause either of us to have second thoughts about staying there.

And the night passed with no excitement. In the morning we rested, leisurely listening to the brook, then removed our gear and returned to the house. Camping over Mill Brook is one of the special times that contributes to my happy memories.

Close Encounters of the Animal Kind

The Daniels family has a distinction of having sort of bagged three relatively large mammals without ever having fired a shot. Even though these thoughts are included in the *Favorite Memories* chapter, they are not really favorites. But they are memories that are worth sharing.

One day near dusk I was returning home, and less than a hundred feet from our driveway, a coyote ran in front of my car. He almost got away with his jay walking, but not quite – he bounced off the right front of the car. He did not appear to be wounded substantially, and inspections of his tracks in the snow did not yield any sightings of blood. As I assume is true with most such abrupt encounters with wildlife, the image of him bouncing off the car went directly into my long term memory and is still easily accessed ten years later.

Heather had a too close encounter with a deer. It also selected the right front of the car to run into. Heather thinks the deer also lived to tell the tale, but she was too shaken emotionally to attempt tracking it down. When she arrived home and related in a distressed voice that she had hit a deer, I tried black humor to cheer her up by exclaiming in a shocked voice, “You killed Bambi!” To which she replied “Dad!!!” and rolled her eye, worried that I might be traumatizing my grandsons who were close by. They didn’t seem fazed as they are used to Grampy saying weird things to make them laugh.

For Heather’s and my encounters, the car was not damaged much. Julie was less fortunate when a moose exhibited poor street smarts. The moose was going to run across the road, and to its credit it swerved to avoid Julie’s van. However, the mass of a moose does not turn rapidly and it bounced with a heavy thud off the driver’s door. The impact broke the window. Very fortunately, the glass shattered into hundreds of pieces as designed so Julie wasn’t cut. But her mouth was open in shock of being assaulted by a moose and she got a mouthful of glass! None was swallowed, so she didn’t need a trip to the hospital for emergency surgery.

So that’s the coyote, deer, and moose story. But hang in there, we even have a bear story for you! And this time, neither animal nor person was injured. My nephew Gary and his future wife Sally were camping in their tent-camper beside our barn. In the middle of the night, Sally heard a critter rattling a trash can, assumed it was a coyote, and thought little more about it. Shortly later, Gary woke up to a ruckus and thought, what is Uncle Dick doing in the garage at this hour. He got out of the trailer, walked towards the garage, and saw a large bear disappearing through the no longer intact door! Worrying for

their safety, Sally and Gary fled to their truck, and then Gary aggressively beeped the horn to scare the bear. That worked! The bear beat a hasty retreat through the garage door window it had enlarged, and lopped off into to woods. The bear was not in the garage long enough to get a reward from eating garbage, so the lack of positive reinforcement implied he probably wouldn't be back for a long time, if ever. But that garage door was trashed – it had to be replaced.

Heather had arrived home shortly before the bear invaded the garage. She was in her bedroom and got to the scene of the crime after the bear had left. She quickly came and woke us up, relating that a bear had been in the garage. I asked if it was still there. Learning that it wasn't, I said I'd come down and look in the morning! Heather has never understood why the excitement didn't draw me down. Well, that bear was gone, and Gary's tales in the morning were just as colorful.

And then there was Arrow, our Springer Spaniel that I referred to as an idiot savant. Arrow was an amazing agility dog, winning lots of ribbons, but he had zero interpersonal skills with other dogs. Arrow would frequently attack our massive male Rottweiller Anchor, who would be too much of a gentleman to teach the pipsqueak a lesson. Well, one Arrow day raced off singing his high pitch wail, which signaled he was on the trail of some game – probably a moose knowing Arrow. A moose might get a little annoyed with Arrow, but certainly not threatened. And Arrow did have enough sense not to actually attack the moose. But on this occasion Arrow must have crossed paths with a coyote, attacked in his usual manner, and didn't live to tell about. Latter that winter, one of Julie's students returned from a walk with just a leg – clearly Arrow's. He who lives by the sword, dies by the sword.

BREAKING UP IS HARD TO DO

Julie Gets an Arena

To further her dog agility business, Julie wanted an arena, similar to one for horses, but for the canine world. One criterion was that it would be close to the house for convenience. The only area that was large enough and relatively flat was just up the hill from the barn.

After the first tree harvest, I had replanted more than 50 white pines in that area, plus shrubs from a wildlife package. By 1999, fifteen years after the tree planting, the trees were doing very well. But I could understand Julie wanting to have a covered workspace for those rainy days when she had dog agility camps and for private lessons. So the area had to be cleared.

The plans that Julie selected were for an 80 by 112 foot arena. Thanks to the wonders of trusses there would be no posts inside the arena; so her agility courses could be laid out with no columns to dodge.

I clearcut the area, and then used Jaws to remove the stumps. The fallen trees and stumps were maneuvered over an embankment and later covered with gravel. Obtaining the gravel was no problem, since the entire location was a gravel deposit. The challenge was leveling the site. There was a ten foot change of elevation of from end to end, and that required moving a tremendous amount of gravel.

When I had the site leveled, Julie liked it so much she decided the arena should be extended to accommodate a 120 foot arena instead of one 112 feet long. To extend the worksite another 8 feet would be a major undertaking since the land was steeply sloped and would require ever increasing amounts of fill as the site headed downhill. Yes, theoretically it could be done, but practically I still had a demanding consultant job with Lucent. I was maxed out. An arena 112 feet long by 80 was agreed upon, but tension was rising between us.

It was late fall/early winter of 1999 when the actual construction of the arena started. The building material was purchased in kit-like format. In fact, the monster sized trusses arrived on site preassembled. Ned Coville and his crew were responsible for taking the kit and making an arena appear. After the walls were erected, and braced for support, a large crane was hired so the trusses could be lifted into place.

Per hour, the crane was quite expensive, but it was worth every penny. Without a crane, it would not have been practical to construct that free-standing arena. To reduce costs, I even volunteered to help fasten down the trusses. When a new truss was held in position by the crane, large nuts had to be fastened to equally large bolts. There were enough such nuts and bolts to keep four of us busy. One of us, me, was a little shaky because of a fear of heights, but I didn't let that slow me down much.

That arena is now totally owned by Julie and plays an important function in her dog agility business. From her standpoint, it was probably worth all the aggravation that came with it.

Strike Two.

My marriage with Julie was my second. My first marriage had been difficult, and I vowed my second marriage would be better and last forever. Well, forever this time was twenty years. One evening, a month after the arena was complete, I was away on business. During a phone call, Julie let me know that the marriage was over. I was taken totally by surprise and devastated.

Of course there were warning signs. The main symptom I had perceived was one of communication. My jokes were often perceived as having a hidden, non-complimentary meaning. It was difficult getting through a day without being taken to task for something I had said.

To Julie's credit, in the midst of a particularly difficult disagreement, she would occasionally suggest that we have counseling. Thinking that the overall marriage was strong, I was not enthusiastic about such proposals, and would respond that if that were what she wanted then she should set it up and I would go. But I never was motivated to take the initiative – until I was told the marriage was over. Then it was too late, Julie was not motivated to save the marriage.

When we married, Julie had a conventional 9 to 5 job, and taught dog training once a week as a hobby. Marriage gave her the financial security to turn her hobby into her profession, and eventually into her life. She admitted that she was the one who changed most in our marriage. Working to be the best dog agility competitor in the country, she traveled a great deal, particularly on weekends and accomplished her goal. We drifted apart and the marriage became less important to her.

After healing, I came out of the marriage a happier person than I was going in. I have many pleasant memories, plus a fantastic daughter. Both Julie and I have always tried to put Heather's happiness above our disagreements, and this way the entire family has won. So Julie, thanks for the memories, and especially thanks for Heather.

Psychologically a hard time

In my initial shock about the termination of my marriage, I briefly considered moving to North Carolina and starting over. After all, the University of North Carolina at Chapel Hill was one of the colleges Heather was considering. Perhaps both of our lives would take a southern slant.

During the previous year, my work and Julie's dog agility competitions had given us two weeks in that state. One was near the coast where I came to appreciate the beauty of the Outer Banks and the other was in the central portion of the state in North Carolina's technological hub. Lucent had a branch location there so I could transfer my worksite to there if I wanted. So shortly after my marriage's end, I went back to spend a week in North Carolina, part of an intense soul searching period. What did I want to do with the rest of my life and where did I want to spend it?

This time I gravitated to the western, mountainous region of North Carolina, consciously trying to approximate my Wonalancet location while making a definitive break from the source of my recent pain. I even found a Carroll County, the same as my county in New Hampshire, with a view of a mountain similar to Mount Whiteface, my home favorite. And in the similar environment people were similarly friendly– they waved to passing strangers.

But during the relative solitude of my sojourn in those southern Appalachian Mountains, I realized the obvious − I couldn't leave the community where I had so thoroughly put down my roots. I had made a wonderful circle of friends. And I had a

strong emotional bond to the land I had worked on since 1975. Much of my life had evolved with my Tree Farm.

But most important was Heather. She still had two more years of high school before leaving home for college. True, Julie and I could timeshare her at a distance, but I would be the second class parent, the one Heather saw for long weekends and school vacations. And of course as a teenager, the novelty of periodically enjoying a new state would wane and she would want to spend her vacations with her friends.

So in reality, it was never a viable option for me to move to North Carolina at that stage of my life. What I needed was a time by myself to order my priorities, to decide the important things in my life.

Transformation of a Flatlander

After the trip to North Carolina it was obvious to me that I was no longer a flatlander. A what?

Around here, a flatlander refers to someone who is not one of us. We live in the mountains, while flatlanders live elsewhere. It doesn't matter if the elsewhere is hilly, outsiders are uniformly flatlanders. Is a person a flatlander if he stays here in a vacation dwelling, and then retreats to a more permanent dwelling? Part of that answer depends upon where the person's heart is. Having your heart reside here even if you live elsewhere is a prerequisite for ceasing to be a flatlander.

Some purists claim you have to be born here to escape the permanent title of flatlander. I want to eradicate that myth in this section. Even though I was not born in this community, or even in this state, my roots have sunk deep now. I feel as if I am totally accepted. As an example, I took some ribbing recently from a good old boy for wearing my Howard Dean button, but it was good natured ribbing, given in the same manner he would to any of his old buddies from childhood. I consider that good-old-boy my friend, and friends can differ about politics, and many other topics, but still be friends.

When you move into a new community, how do you become an insider, accepted as an equal community member? If you are very different from those in your new community, your challenge will be harder. But you shouldn't try to change the community to suit your personal idea of paradise. Your success would be highly unlikely. Hopefully, you move to a new environment because both the environment and its inhabitants appeal to you. And if you exhibit a positive attitude about your new life, you are off to a good start.

I followed these guidelines when my projects required help: use local people, treat them with respect, and don't quibble about price. By helping to financially support the community, you can make steps toward being accepted in the community. But if you attempt to get work at a bargain price, you can easily evoke hard feelings. Instead of trying to talk a contractor down, learn about his reputation. There might be well established builders in the area with wealthy clients, as well as lean and hungry young firms with less work backload. If the junior squad has previous work of demonstrable quality, you could profit from their desire to build up their reputation.

Another great way to become a member of the community is to have a kid, although I wouldn't recommend having children just for that purpose! Heather was in fourth grade when we moved here and her various school activities, birthday parties, swim lessons, soccer teams, and other community events helped to deepen our roots here.

Heather's growing up in a small child-centered town has made an indelible mark on her and us. For the rest of her life, Sandwich will be Heather's home town.

Another way we give back to the community is by allowing the local snowmobile club to use one of our trails as an important link in their network. It is especially appreciated because the Sandwich Notch 60 dog sled race follows this route. In other seasons, we are also happy to have people hike our trails and have never been disappointed by disrespectful behavior. All right, there was a bad apple. One fall someone used his four wheel drive truck to explore our trails a few times, leaving unwelcome ruts. A few rocks well placed by the back hoe blocked his entrance and that problem stopped. Peace and open access returned to the tree farm.

If you want to feel part of your new community, be like Will Rogers. He never met a person he didn't like, accepting them for what they were and enjoying their uniqueness. Like him, I believe people are a very interesting species, and have only met a few I didn't like!

Wonalancet Out Door Club

Sandy and I are very active in the Wonalancet Out Door Club, providing us a way to be active in our community. It is gratifying to donate some of our energy to an environmentally friendly organization.

In a prior section about the community of Wonalancet, you were introduced to Kate Sleeper. As a result of her plans to attract summer tourists, the locals established many hiking trails. Providing for maintenance of the trails gave birth to the WODC. The date when the WODC graduated to being an organized club and not just a couple of neighbors working on a trail was not definitely recorded. The club finesses the ambiguity by stating beneath its logo "Caring for the Sandwich Range since 1892."

WODC cares for over 50 miles of trails in the vicinity of Wonalancet. In addition to trail tending, the club plays an active role in environmental issues that affect the Wonalancet area. For example, WODC was very instrumental in helping to get part of the Sandwich Range designated as Wilderness. One of the club's former presidents, George Zink, is often referred to as the Father of the Sandwich Range Wilderness because of his advocacy.

The majority of trails that WODC tends are in Wilderness, which implies no chainsaws can be used to maintain these trails! So the trails are tended the old fashioned way – with handsaws, loppers, and other non mechanized tools. This is labor intensive so the club can always use volunteers or donations to help hire trail crews. More information can be obtained via www.wodc.org.

Why are we going out of our way to plug this organization? Because it is a very important part of our lives. Some of our best friends and most rewarding experiences stem from the WODC. I have been active for years, serving as President and various other offices. And Sandy has been Database Chair for years. Being an active member in an outdoor/environmental organization is a gratifying way to give something to the community, to the environment, and to the future.

Ned Coville

As previously mentioned, using local labor helps assimilation into a community. For almost all of my construction projects, Ned Coville was my builder. He is the son of Stan Coville, the person who sold me the land. The first project Ned did for me was finishing of the upstairs of "Clarinda's house". At that stage of his career, Ned was a

relatively recent addition to the builders in the Sandwich/Tamworth area. My acquaintance with Stan and inspection of some of Ned's work helped me decide he was the right person for my relatively small project. I was very happy with Ned's work, the amount he charged, and our working relationship. Based on that first experience, we chose Ned to build our barn when we sold Clarinda's house. Later he built Julie's and my house, the agility arena, and then my third house on Chase Road following the termination of my marriage.

Somewhere along the way, Ned and I became friends, not just builder/customer. He was more than willing to work with the nonprofessional plans I supplied, make sure they were practical, and offer all sorts of suggestions for improvements. I respected his work ethic and the quality of his work, and I'm sure he appreciated my being reasonable in my requests. And I was a hard worker, willing to help out when I could be of use.

End of the Tree Farm

After I was on my own again, Peter Pohl contacted me about the Tree Farm's periodic inspection. To remain certified, Tree Farms in New Hampshire have to be inspected every five years to insure that proper forestry practices are being maintained. For us the inspection would be a formality because Peter was aware of my forestry ethics. However, I declined the inspection, and to the dismay of Peter, allowed the Tree Farm status to lapse.

My choice is hard to explain, perhaps because it was more due to emotion than reason. The marriage had been rendered asunder, and in the process my holdings had been downsized from 150 acres to 60 acres. I was suffering from post partum depression. I wasn't emotionally capable of becoming the proud papa of a 60 acre Tree Farm. Besides, a Tree Farm Certificate was not going to change my management techniques. I have maintained this forest not for brownie points, but from a sense of commitment. So why have the property periodically inspected when it would continually open a wound? One answer could be, to serve as an example of what a Tree Farm can be, but hopefully this book will also serve that purpose.

After some healing, I came to consider the severing of ownership of Julie's portion of the land as being akin to watching your child leave home and forge a new life. I had done the best I could to improve the woods I had purchased. More than half of Julie's portion had been thinned of overcrowded balsam firs, and the forest was responding as anticipated. My child, that forest, had been given a good start and was now on its own. I will watch it fondly as it continues to mature and always feel an attachment to it.

Someday, the same will happen to my remaining 60 acres. Perhaps my ownership will terminate because of a conscious decision, such as not being able to play in the woods anymore because of the infirmities of old age. Or perhaps I will be run over by a moose, and quickly expire. Whatever the reason, finiteness of life will definitely cause my stewardship of this land to end. But perhaps I'll still be watching over this little piece of heaven and enjoy seeing the changes it goes through.

HOUSE III

Choosing the House Site

Like me, Julie had fallen in love with our environment in the White Mountains. We both wanted to live where we were, she just didn't want to be in the same house with me. Fortunately 150 acres of land can be divided, still leaving two very nice sized lots. Julie was very fair about this division process, letting me, as original owner of the land, choose what section I wanted for my home.

I loved our house, with its wonderful view of the Big Pond and Black Snout Mountain in the background. But on the other hand, the new agility arena was an eyesore to my woods loving sensitivities. To clear that site, I'd had to kill trees I had planted and tended. Sentencing one particularly nice white pine to execution had even brought tears to my eyes. But I could get over that, just like I hopefully could get over the termination of my marriage. Being practical, the only sensible solution was for Julie to have the section of the property that contained the arena, which meant she would keep the house we had lived in. I would start over in a new house.

Modifying the Conservation Easement

Snow on the ground didn't prevent me from analyzing my various options for the new house location. The options were limited by our Conservation Easement which specified only three locations for house building.

I choose a site close to the road for ease of access, as I had with my two previous Chase Road houses. Also, I wanted my house as far east as possible, maximizing the distance from the soon-to-be Julie's house. I felt that distancing our dwellings would make our future lives easier, and also maximize the amount of contiguous undeveloped land on the property. This was important not only to my woodland ethics, but also to the Society for Protection of New Hampshire Forests (SPNHF), the holder of the conservation easement.

Julie and I wanted to split the land approximately in half. That could have been a major problem because the easement specified that any new subdivided lot could be no more than five acres in size. This was done to guarantee that the remaining undeveloped part of the land would be as large as possible, facilitating maintenance of the woods and maximizing the quality of the wild life habitat.

I anticipated that SPNHF would be reasonable in modifying the conservation agreement, because it was the placement of the houses that affected the forest, not the size of the actual parcels. I suggested that the lot size clause be modified in exchange for granting them a new specification, that no additional house could ever be built. This was agreed to.

Also, I am very grateful to SPNHF for helping me obtain a right-of-way. Erratic Trail originates at Chase Road on Julie's section of the land, but soon passes onto my section where most of that trail is located. I wanted an easement to guarantee road access to Erratic Trail and Julie agreed, but wanted the easement to last only as long as I was owner of the land. Even though I anticipated owning the land for a reasonable approximation of forever, I wanted any future landowners to benefit from a legal right of way from the road into the woods. SPNHF had the tie breaking vote and voted for no

modification of the easement without a legal right of way to ensure the possibility of future logging. That ended the debate.

Clearing the Site

During the time that my new house was being built, I was living in the barn apartment. The living space was 12 by 24 feet, and it was sparse by most people's standards, for example, no TV. But from a minimalist viewpoint, I had everything I needed: a woodstove for heat, a very comfortable bed, a bathroom, electricity, and a phone line so I could work for Lucent via the internet. The rustic table still sat in front of the picture window, allowing a great view of the Big Pond. And I had the great advantage of being within feet of where Heather lived. I looked forward to her visits, and I occasionally prepared makeshift meals for us using a hot plate and microwave.

But the arrangements were clearly temporary. Julie and I found it stressful to be within shouting distance and I was very motivated to have my new house built as quickly as possible. So I worked forty hours plus on my job for Lucent, while designing the new house and clearing the future house lot in my spare time. That winter and spring, my activities gave me all the exercise and distraction I needed.

Water Control Strategies

I mentioned earlier that the street side of Mill Brook had amazingly few visible large rocks, belying its location in the appropriately named Granite State. Well, there was one exception in this rock free land, my new house site! So why choose to build there; did I really like challenges that much? No, but despite having 60 acres, wanting to build close to Chase Road limited my options. Boundary Brook made the western third of the frontage unsuitable, and the middle third did not have a large enough flat spot to satisfy me.

But this eastern third was not optimal either because in addition to the aforementioned rocks, a road culvert for draining water was aimed right at the house site. The rocks throughout the site compounded that problem because they had been accumulating humus since the glacier dropped them off eons ago. Humus rich soil drains much more poorly than gravel based terrain.

After the house site was cleared of trees, I removed the rock-topsoil combination. The topsoil was stockpiled for future landscaping around the house. The rocks were sorted according to size. Smaller ones were put aside for building a stonewall, the creation of which is described in the *Rocks are Us* chapter. Larger ones were used a few months later to create a retaining wall to hold the driveway in place.

The largest rock that came out of the house site was a miniature of the esker's erratic. The house's erratic was considerably smaller than the esker's, but took both Bill Read's excavator and my backhoe to move it to a spot in the backyard where, to the eyes of rock lovers, it enhances the natural beauty of the area. The hole left from removing the erratic partially filled with water, confirming the wetness of the house site.

When I had finished removing rocks and topsoil, the housesite had a nice gravel surface. Since the site had a gradual slope, that gravel would aid in letting water drain away from the house. But proper drainage required more gravel be added so that the cellar floor would be higher than the terrain on the downhill side of the house. The cellar "hole" was actually created by hauling in over 300 truck loads of gravel to raise the elevation!

Fortunately, there was a small gravel knoll along Erratic Trail that I had cleared during the winter. I used the backhoe to load the gravel into Bill Read's truck, Bill drove to the house site, where Dennis spread the gravel with the excavator. Then they loaded the truck with tree stumps removed from the house site and Bill dumped them at a low spot near the field at the end of Erratic Trail. By the time Bill returned to the gravel site, I usually had arranged a pile for quick loading into the truck.

Raising the house's elevation was only part of the water control strategy. We decided to circle the house with perforated plastic drain pipes which could carry water further down the hillside. Three separate loops encircled the house: one six feet outside of the foundation, one just beyond the foundation, and one inside the foundation, just below the cellar floor. I wanted to intercept the water with the outer perimeter of pipe, get the overflow with the next ring of pipe, and have the third layer of pipe for peace of mind! And during construction, the outside of the cellar wall was water proofed too.

We succeeded. After five years with many wet seasons and heavy rains, there has never been any water in the cellar.

The House

While I was clearing the site that winter, I was simultaneously designing the house that would be built on the site. Our Kingston and Sandwich houses had been jointly designed by Julie and me. Julie was the main contributor. When it came to differing points of view about house design, I was the compromiser, maybe from a sense of inferiority about artistic design and maybe from a desire to keep the peace. Now, for this new house design, I was on my own. But true to my engineering roots, I borrowed ideas I liked from here and there and came up with my design.

The house had its roots in Clarinda's Cape, the Kingston house, Julie's Sandwich house, and a house I saw while in North Carolina. While pondering relocation to North Carolina, I had seen an attractive, practical house. I liked it enough to take a picture of it and the exterior of my new house closely resembles that.

Some of my new house's features are special to me. As usual, the house is oriented toward the south and has lots of windows on that side to enhance solar gain. One new feature is a sunroom on the south side of the house, connected to the living room by insulated glass doors. The doors are opened three seasons of the year, and usually closed during the winter to conserve heat. But even in the winter those glass doors provide a sense of openness and connection to the woods. And because the sunroom was planned as an integral part of the house, it was well insulated to extend its usefulness.

When my Uncle Everett died in 1990, I was left a Model A Ford that was in very good condition. But it was beyond my mechanical capabilities to keep it maintained, so after years of remaining unused I finally sold it. The sale was done with mixed feelings because Uncle Everett was special to me. We had much in common with our love of the woods and we both devoted much time to fire wood preparation. As a continuing remembrance to Uncle Everett, I decided to use that money to have an extra special kitchen built with beautiful cherry cabinets created by a friend of mine, Chris Conrod.

I liked the cabinets so much, I had Chris make a custom cherry media center for the corner of the living room.The design of the media center was copied from another friend, Betsy Black, whose house also inspired me to install hardwood floors, even in the kitchen. Julie and I had previous had hardwood floors in part of our Kingston house, but

the dogs had made it difficult to keep the floors in good shape. Since having dogs did not fit into my future plans to travel substantially, I decided to again have hardwood floors.

My design for wood heating has improved with each of my houses. The next chapter is dedicated to heating with wood, so I'll be brief here. This house has a straight path to the woodstove from the outside door, making it easy to roll in wheelbarrows of wood. And above the woodstove on the first floor is a warming closet, similar to those often found in colonial houses. The bottom of the closet is six inches above the floor, with that six inch space vented to allow heat from the woodstove to pass directly from the basement to the main floor.

As the house was being built, I found myself being less frugal than usual; in fact at times I was down right extravagant! My marriage had been terminated and I was going to drown my sorrows by building a very nice house. The sunroom was one very nice extra touch and another was a 24 by 24 game room built above the garage. The game room is accessed from the second floor through an insulated door. It is part of the house, but with only a painted plywood floor and no heat source, it is assessed as an unfinished room, and taxed as such, a concession to my still frugal ways.

The house exceeded my expectations, being by far the nicest house I have owned. People have often complimented me on its design and it was a pleasant surprise to find that I had such ability. My greatest accolade was when Heather related how she always gets such a nice feeling being in this house, and hopes that it will fit into my and her plans that she can live in the house after Sandy and my "lease" is up.

HEATING WITH WOOD

When I started collecting items for this chapter about heating your house with wood, I planned on something short, just a few sections. But the ideas just gushed forth, a graphic demonstration of the central part that heating with wood has played in my life. So I decided to do it right and cover a multitude of topics: the benefits to the environment, to your physical and mental well being, and to your pocketbook.

Many of the thoughts in this chapter have been previously mention in this book, scattered at random places as they introduced themselves into my life. At the risk of being somewhat repetitious, they are presented here again, this time in logical instead of historical order, along with many more topics related to heating with wood.

Benefiting the Environment

When wood, coal, oil, or natural gas is burned, carbon dioxide is created. Where does it go? Into the atmosphere of course. Not all of it stays there, but some does. The net result is that the amount of CO_2 in atmosphere is increasing. Wood, unlike the fossil fuels, is a renewable resource. It takes years to grow a tree, but that's an insignificant time compared to time needed to create coal, oil, or natural gas. So if the quantity of trees in our forests stays the same, then the amount of carbon (their fundamental building block) stored in the trees stays the same. This implies that *if sustainable forestry practices are used, burning wood does not create a net increase in the amount of CO_2 in atmosphere.*

So far, the facts I have related about carbon dioxide production aren't controversial; they are scientific truths. The controversies and passions arise when people try to connect increases of atmospheric CO_2 and global warming. Are increasing levels of CO_2 related to the relatively recent increases in average world temperatures? I believe this, as does most of the scientific community.

For a simple intuitive understanding of the relationship between CO_2 in the atmosphere and rising temperatures, return in your imagination to the age of dinosaurs. Or watch Jurassic Park again! Back then, perhaps a hundred million years ago, fossil fuels were slowly being created. The amount of carbon stored in the ground was much less than it is now. And what was the climate like? Do you picture snow and ice and frigid weather? No way, you picture a tropical jungle. Do we want to risk having the earth's present ice caps melt, causing the seas to rise and flood many of the world's major cities? It doesn't seem like a good idea to me.

So when I heat our house with wood, and maintain the forest to have a continuing wood supply, I feel warm and virtuous. As a side effect, the woods are beautified because the trees I select for fire wood are not randomly chosen, but picked according to criteria that I've learned over a period of time. The questions I ask myself are simple ones. How will these woods look five or ten years from now with or without this tree? Will this tree grow into a noble specimen or will it stunt the growth of its more promising neighbors? Will the wild life be happier? Will I be happier because a path or view will be created? The answers to the questions are not simple, but years of experiences have given me insights as to how cutting a particular tree will affect the forest, the wildlife, and me. I do believe that, on the average, when I cut a tree the environment will benefit. Do coal miners have a similar feeling?

Reducing the danger of forest fires can be another benefit of culling firewood from a forest. For northeastern forests, this is not usually a major criterion because we have substantial rainfall and don't usually have prolonged dry spells. But even here, small forest fires do occur and the probability that our woods will experience a major fire is reduced by cutting underbrush, managing the forest, and creating roads both as fire breaks and for fire equipment access.

Benefiting Health

You have probably heard the saying that wood heats you three times: when you cut it, when you load it onto you woods vehicle, when you split it, when you stack it close to your house, when you haul it into your house, and when you burn it. Something must be wrong with my math − that certainly seems like a might more than three times! But whatever the count, each one of these endeavors, except the actual burning, provides me with exercise. I live by the theory that a task isn't work until I think it is, so I consider my wood gathering exercises fun and quit when a session is no longer play.

Odds are, those who heat with wood weigh less than those whose sole contribution to the heating process is paying the bill. And not only is cutting, splitting, and stacking of wood good aerobic exercise, the bending motions help keep you flexible.

And this wood gathering process can be good for your mental health too. Endorphins released during exercise produce a feeling of well being, a warm fuzzy feeling. Also, participating in the heating of your house can give you an empowered, justified feeling of independence. You are less a victim of the whims of the global energy market. When your electrical power goes out (up here it is *when* not *if*), you don't have to shiver waiting for the grid to be fixed.

Wood Splitting the Old Fashion Way

To minimize the amount of wood splitting I have to do, I try to have a two year supply of wood on hand. After two years in a woodpile, most 6 inch diameter logs will be sufficiently aged (dried out), even if they haven't been split. But because of the water tightness of birch logs (think birch bark canoes), I tend to split them if they are over four inches in diameter.

I used to enjoy the upper body workout I got from using a heavy maul to split wood. But when the rapidly moving maul contacts the wood, it sends a shock wave through the whole body, attacking hardest its weakest point. After a short time my knees feel as if they are supporting twice my normal weight and recently they have taken to complaining about such abuse. With the wisdom that comes with age, I have begun to listen to their complaints. In 2004, for the first time, I rented a wood splitter. But before relating my brief experience with a wood splitter, I'd like to share some knowledge I have gained by splitting wood manually over the past years.

The most important lesson is to select wood in small enough diameters so that it does not require splitting. Problem solved! But sometimes the trees that I cut seem to select themselves. They have been felled by storms or grew where I want to establish a trail or a view. And more often than seemed right to me, I have had to clear a house lot! So some of my wood inevitably needs splitting.

Wood will often split easier when it is frozen, implying that winter is a good time for wood splitting. But frozen wood of a large diameter can be impossible to split, the maul spitefully bouncing off the surface with negligible penetration. Birch is the worst culprit. Even an eight inch diameter log, when frozen, can be more work than it is worth

to split. Frozen sugar maple splits well until it reaches a critical diameter of about a foot. I imagine these facts are temperature dependent too, but have little experience with very cold temperatures because when the temperature is below zero, I tend to find other things to do!

Put in unscientific terms, freezing makes the wood brittle and thus easier to split. So it logically follows that mushy wood, wood that is starting to rot because you put off splitting for too long, is more difficult to split.

As just alluded to, ease of splitting is also species dependent. In general, the straighter the grain and more knot-free the wood, the easier it is to split. Ash is my favorite wood for splitting with most red maple a close second. The qualifier *most* was used because some red maples have twisty grain and are not worth the effort to split.

Having an endless supply of wood, I no longer feel compelled to utilize the butt (stump end) of every tree that I cut. This part closest to the ground can be too large in diameter to easily split by hand. I used to consider this an environmental sin and would become quite sore tilting with my maul against unyielding wood. Now I consider that chunk of wood to be a nice storage place for carbon and feel no compunction about letting it slowly decay while providing food for flora and fauna. But I do tuck problem pieces of wood in hollows so they will not be eyesores.

Coincidental to writing this section, 20 year old Heather expressed an interest in learning to split wood. It is a nice way to work out frustrations. When you are splitting wood, your focus on the world narrows, sort of like the Zen of wood splitting. After her first session of wood splitting, Heather is still enthused about the activity, even though not that much split wood was produced. Like swinging a tennis racket and having the ball do what you want, it will take time to develop a smooth wood splitting swing. So my approach here will be the same as I did for Heather – a few hints and leave the rest to trial and error.

If you start out with knot free wood about six inches in diameter, you are more likely to get an early feeling of success. Examine the end of the log for a slight crack emanating from the center of the log. If you don't see one, try another log. As your expertise develops you'll graduate to knotty logs that have give no obvious hints about where to aim the maul.

Notice that the crack emanating from the center travels perpendicular to the growth rings. That is how you always want to split – perpendicular to the growth rings. Instead of trying to describe the proper stance, location of feet, distance from the log, motion of the hand along the shaft of the maul, and other intricacies of swinging a maul, it is best to watch an experienced person. Failing that, trial and error will probably work for you, just as it did for me. It will just take a little longer and perhaps result in more sore muscles.

With a good whack from a maul, and a cooperative log, one swing and a six inch diameter log is adequately split – then on to the next log. For an eight inch log, you first spilt it in half, and then should split each of the pieces into quarters. When you become really good, three swings will split an eight inch log into four pieces.

Back to reality − if you are just beginning, your aim will be poor and the maul's blow rather feeble. But practice will overcome these problems. Wood splitting is not an easy sport, but practice will increase your muscles and proficiency. From experience you will learn when to switch from trying to overpower the wood with the maul, to using reinforcements – a wedge.

On a knotty piece of wood, or a large log, I almost always use a wedge. A successful session with an eight inch diameter log goes like this. A mighty whack from the maul results in a relatively deep mark in the log, perpendicular to the growth rings, but it does not cause much of a crack to appear. You now realize another whack to this same spot is not likely to split the log in half, so it is time to use the wedge. The wedge is placed place above the mark the maul created, and given a couple of relatively gentle taps to start it on its way. Then a mighty whack with the blunt end of the maul on the wedge splits the log in two. Now that the continuity of the bark has been broken, the two halves of the log should be much easier to split, and if all goes well, two more swings of the maul and the wood is quartered.

About that mighty overhand whack with the back of the maul to drive the wedge in − don't try that unless you have practiced a lot and have a maul with a fiber glass handle. If your swing is too long, the iron head of the maul will not make contact with the wedge, but the shaft of the maul will. That can split a wooden maul handle and even damage a fiber glass handle. So while your skills are developing, you might find it more productive to use the maul like an overgrown hammer when sticking a wedge. No overhand shots, just a series of relativity hard hammer-like swings. Even after years of manual wood splitting, my wedge shots tend to be of the hammer-swing variety, unless I am trying to impress my daughter!

Wood Splitting the New Fangled Way

Just as it is difficult to find a person who has had sex just once, it is difficult to find a person who has used a wood splitter just once. Once you have tried it, you wonder why you waited so long.

I will still occasionally use my maul to split wood, because in moderation it is good for my body. But when it comes to serious wood splitting, I am a convert. However, a lot of the knowledge gained from manually splitting wood does carry over to splitting via a machine. The overarching principle is the same – a wedge-like object is used to force the wood apart. Knowing how to orient the wood on the log splitter to minimize the motor's effort is kinder to the motor. It will not have to work as hard, and depending on the power of your wood splitter, it might make the difference in your splitter being able to handle a challenging piece of wood.

The splitter I used was a top of the line one. I rented it from my friend Fred Lavigne, who is the most environmentally conscientious logger I have ever encountered. His machine does a four-way split. In one forward push of the piston, the wood is split into four pieces by the stationary cross shaped wedge. A small shelf catches the split wood, so you don't have to bend over to pick up the split wood.

Two people make the splitting go much faster and easier. One person puts the log on the splitter, and operates the splitter – holding the lever in a forward position to cause the log to be split, and then putting the lever in the reverse position to get ready for the next log. While the next log is being fetched, the other person places the split log into the backhoe, wheelbarrow, or into the split pile (depending on your piling strategy).

The most dangerous part of using the splitter is for person number two to have fingers just in front of the stationary splitting wedge, while person number one is causing the pusher to advance; fingers can be lost this way. Person number two should never have hands in front of the splitting wedge while the pusher is advancing. Safety glasses should

be used by anyone close to the wood splitter as splitters can occasionally fly in random directions.

My last tip is to not do too much in one day. Yes, it is much easier to split wood with a motorize device, but there is much physical effort involve. Hopefully you will be lucky like we were and be able to rent a machine by the job, and not by the day.

Storage of wood outside

We burn about four cords of wood a year, and I like to have two years supply on hand, so that's a total of eight cords to store. Even if we wanted to store all that wood inside, there would not be enough room. And it is better to let the wood age outside where air circulation will prevent the wood from going moldy. A moldy basement is not a pleasant basement. Also, keeping wood outside as much as possible minimizes the number of wood chewing bugs that get into the house.

Our wood piles are scattered under trees by the side of the house, less than fifty feet from the door, not an unreasonable distance for the one to two wheelbarrow loads per day that are required during the heating season. And the terrain is level, so pushing up an incline does not add to the effort.

To minimize the rotting of wood and enhance drying, I cover the tops with strips of corrugated metal roofing which can be purchased relatively inexpensively at a building supply store. And to keep the wood from making much contact with the ground, I put parallel sapling poles beneath. Those saplings are eventually turned into kindling wood after the wood on the pile is exhausted.

In inclement weather or in deep snow, it is not fun to bring wood into the house. A wood storage area by the woodstove solves this problem. It holds perhaps a cord and a half, adequate for at about a month of heating. To minimize any bug problems, this inside wood storage is not stacked until early fall, and then I stack it with wood that has not been totally seasoned. During the fall heating season I burn my oldest, bug prone wood. It comes from the outside, directly to the woodstove. So there is no danger from bugs, just to bugs. And the heat from the woodstove turns the area into a facsimile of a kiln, curing the cord and a half that is in storage close by.

Choosing Your Heat Source

Whether you choose a woodstove or wood furnace does not affect many of the hints I give in this chapter. In fact, I confess to never researching the pros and cons of a wood furnace. For an educated guess, a wood furnace will tend to hold more wood, keep a fire longer, and be easier to attach to a hot water system. But it will cost more, take up more room, and not provide a flat surface for cooking or boiling down maple sap. When I designed our current house, I was a busy man and went with what I was familiar with, a woodstove.

I have owned three Fisher Mama Bear woodstoves in my time. They were in our Clarinda's Cape, the Kingston house, and what is now Julie's barn. Needless to say, the fact that I had three of the same type of woodstoves implies I like the design. They are quite simple, resembling an iron box. They are not designed for great beauty or to let you attach a screen and leave a door open to simulate a fireplace − they are designed for no frills fires.

I now have an All Nighter. This stove is very similar in appearance to a Fisher Mama Bear and performs about the same. Both stoves hold 24 inch logs. The All Nighter has an interior pipe that can be attached to a fan to help push hot air around. For me this is

an unnecessary feature. I designed the house so heat would circulate quite well by itself. So the fact that the interior pipe requires logs plied in the top of the fire box to be less than 20 inches is not appreciated. Why did I get this particular woodstove? I was pressed for time, having a house rapidly built so I could get on with my life after my marriage was terminated. But I've had it for more than five years, and it is now an old friend.

Your new house

I'll now share some details I included in my house design which help make it easier to heat with wood. These come from a guy who tends to the practical approach, but if you are heating with wood then you'd better be practical. Little inconveniences could add up and frustrate your noble goal of heating with a renewable energy source. At the top of my design list is a walkout cellar, or from my viewpoint, a wheelbarrow accessible cellar. It is very convenient to be able to wheel the wood from its outdoor storage area directly into the cellar.

By all means, the chimney should not on an exterior wall, but relatively close to the center of the house. True a nice brick chimney on the end of a house does look pretty, but avoid this temptation. Not only does it cost a lot of money, much more creosote will condense in the flue (stay tuned for why creosote should be avoided). A chimney that makes its way to the roof via the interior of the house will of course be warmer, so less creosote will accumulate in it. In fact, this warmer chimney can be thought of as a heat exchanger – it helps to heat the house too.

If the chimney is near the center of the house that implies the woodstove is also near the center. This is of course ideal for heat distribution. But as an added attraction it will save you many steps each time you go down your cellar stairs to tend the woodstove. Cellar stairs are usually located close to the center of the house, so those cellar stairs will then lead you relatively close to your woodstove.

With your woodstove located in the cellar, you have automatically lessened the probability of a fire. Any sparks or hot coals will be on the cement cellar floor which is not combustible. Before your cement floor is poured consider putting Styrofoam under it. A lot of the heat from your woodstove will be conducted into the cement floor then forever escape to the ground beneath. The Styrofoam will prevent most of the heat from escaping into the ground, so when you fire diminishes during the night the cement floor will be a heat source and help moderate temperature swings. Of course, if Styrofoam is good under your cellar floor it is also good outside the cellar walls. In fact, when summer comes around you will discover an unexpected bonus – because the cellar floor and walls are not being dramatically cooled by the earth, humid air will not condense on these surfaces. As a result, your cellar will not be damp and you won't have mildew problems.

So what about this creosote stuff? It is an evil byproduct of burning wood that can condense inside the flue of your chimney and clog it up so the chimney doesn't draw air adequately. Even worse than a clogged chimney is a chimney that acts like a woodstove because the creosote is on fire! We had a chimney fire in our Kingston house. The house survived with no damage, except for the chimney flue that was destroyed. A thousand dollars solved that problem by installing a metal stove pipe inside the chimney.

The moral to the story is to frequently check your chimney flue to make sure it is not clogged with creosote, and have it cleaned when needed. That said, I have been in this house for five years, heated it predominantly with wood, and never had the chimney cleaned! Why? Because it has never needed it! This cleanliness is not because of good

luck, but because of good planning. This time the chimney's flue is not rectangular, but circular. When smoke rises in a circular flue, it does not encounter rectangular corners which create eddies. Instead the flow is uniform, not giving the creosote as much of an opportunity to start forming in the corners (because there are no corners!).

Another difference this time around is that I keep a magnetic thermometer mounted on the stove pipe which connects the woodstove to the chimney. I try to avoid having prolonged slow fires which result in a thermometer reading of 200 degrees or lower. Slow fires make it easier for creosote to condense in a chimney. Instead, I like that thermometer to read between 300 and 400. And occasionally I have a roaring fire getting the thermometer to perhaps 700 or 800 degrees. This helps burn off any creosote that has been accumulating in the chimney. Couldn't this cause a chimney fire? Not unless there is a lot of creosote in the chimney. And if a chimney fire does occur, my fancy modern flue is designed to withstand a chimney fire with no ill effects.

By now the astute/worried reader should be asking, how do I check the flue to see if it is filling up with creosote and needs cleaning? No, you don't have to go up on the roof. Chimneys are constructed with a small cleanout door to let you remove creosote chips that drop to the bottom of the flue. Open this door, shovel out any creosote, and then insert a small hand mirror into the flue. Angle the mirror towards the top of the chimney. If you are doing this in the daytime and there is no fire in the woodstove, you should be able to clearly see the sides of the flue and with good luck a nice flue sized piece of sky at the top. If the flue diameter is diminished by a third or more due to creosote, it's time to call a chimney cleaner. If you can't see the sky at all because it is night time or you have a fire going, time to get your act together.

How does the air circulate in our house? Very well thank you! It is a passive system, that is, no fans are needed to aid the circulation. The woodstove is surrounded on three sides: the chimney in back, sheet metal on the left to protect a water heater from overheating, and sheet metal on the right to prevent an interior wall from overheating. Above this chamber is the warming closet. The warm air doesn't actually enter directly into the warming closet, but into a six inch cavity below it. The flow of warm air exiting from the heat vents is quite substantial since partially enclosing the woodstove creates a chimney-like effect.

In addition to the vents above the woodstove, the cellar stairs also conduct warm air to the center of the house. Of course, if air were just allowed to rise up towards the center of the house, it will not be very happy. A vacuum will be caused by all the warm air rising out of the cellar and the warm air will no longer rise. So I have provided cold air returns by placing some vents between the floors. Where should these vents be placed? Where the cold air is of course, and that implies along the outside walls. Hint – don't place a cold return vent in a bathroom, audio privacy is important for a bathroom.

I'll close this section with a word of caution: radon. Radon is a radioactive gas that has been linked to lung cancer. It can be present in the soil, especially in porous gravel. Heating with wood can exacerbate a radon problem. The air flowing up a chimney has to be replaced from somewhere. If you are very proud of your tight energy efficient house then you also should be concerned about radon. The tighter a house, the more the tendency for the chimney draft to cause air to be sucked out of the ground and thus the higher the likelihood of a radon problem. I intentionally am content to have my cellar door a little drafty. Also, sometime in the winter when your heating challenges are most intense,

have a radon test performed to learn your worst case scenario. Ignorance may be bliss, but it also can be deadly.

Lighting the fire

Starting a fire in a woodstove can often be a challenge. In fact, it is considerably more of a challenge than starting one in a fireplace. The typical way to use a fireplace is to place the logs on top of a grate. The air has good access to the fire because of the grate, and paper can be placed crumpled under the grate for ease of starting the fire. If the fire doesn't catch the first time, place more paper under the grate and try again.

A grate is usually not practical in a woodstove; it would get buried quickly by the ashes that are produced and take up valuable room for logs. The usual method of starting a fire in a woodstove is to place crumpled up paper at the bottom of the stove, put kindling on top, and perhaps add a layer of small logs. Then you light the fire. If you don't succeed with your first attempt at lighting the fire, it might be necessary to remove some of the logs and wedge more paper under the remaining ones. So the goal is to succeed the first time, which implies it is best to have plenty of kindling available. If you have just had your house constructed, as has been too often the case for me, the scrap lumber makes a great source of dry kindling wood. But eventually that supply will be exhausted, and some year it will be necessary to forage for kindling.

In the spring and fall we gather dead branches from the woods around our house. This not only provides an excellent source of kindling, it helps to improve the looks of these woods. During the winter time we don't need as much kindling as in the adjacent seasons because we tend to keep the fire going continually.

In addition to kindling, it helps to have varying sizes pieces of wood. When I cut up a tree, I utilize as much of the tree as possible. I end up with pieces less than an inch in diameter all the way up to logs that need to be split. The small pieces can be used a year later as the wood that gets placed above the kindling wood, and two years later the small pieces can be used as kindling.

This past year I added two more tricks to apply to starting fires. One of these I have known about for decades, but I never owned the prerequisite equipment. Sandy bought me a bellows this year from her favorite store, Ebay. I am surprised how often I use the bellows. If the fire is stubborn to start, using the bellows to supply added oxygen briskly to the fire does wonders. It will soon be roaring and I can adjust the damper to maintain a more temperate fire. Without the bellows, I would probably be up and down the stairs a few times before having a well behaved fire.

The second trick I think I invented, but it is so simple I am sure lots of other folks think they have invented it too! In the past, I have often been frustrated, scrunching up some pieces of newspaper only to find they unscrunch themselves before I can get the kindling on top. I solved that problem by forcing the scrunched paper into a small box, such as a cereal, cracker, or similar box. Not only are these pieces of paper constrained to remain in their crumpled position, they take longer to burn and provide a more sustained fire to heat the kindling. Being my efficient self, I usually prepare my boxes of kindling paper for the next fire while I am waiting for this fire to adequately start.

Using the stovetop

Once upon a time, a woodstove was the only stove in the house. It was where all the cooking occurred. In our house it still serves that function when the electricity goes out. That doesn't happen very often, but when it does we feel very independent with our

toasty warm house and stew or soup simmering on the woodstove. For that matter, even when the electricity is available, the woodstove is still a great place for cooking turkey soup. And what better place to get rid of a turkey carcass after it has been souped. Just toss it into the stove and eventually everything disappears.

One of the disadvantages of wood heat is that it can exacerbate low humidity in the winter time. Low humidity leads to dry chapped skin, a greater tendency to have nose bleeds, and more susceptibility to colds. And it is not just detrimental to people. Hardwood floors get spaces between the boards, wood furniture is stressed, household plants wilt, and static electricity can be annoying.

People who don't heat with wood have these problems in the winter too, and many resort to using humidifiers. I say resort because that is yet another use of energy which raises the electric bill, and contributes to the global energy problem. Even though wood burning people have a potentially more severe humidity problem, they also have a very easy fix – a pan or two of water on top of the woodstove. During the winter we add six to eight GALLONS of water to the air each day via this simple technique. True it takes a little vigilance to make sure the pots don't run dry, but it soon becomes automatic to check the water level when wood is added to the stove.

Maple Sugaring

We'll finish this chapter with a section about maple sugaring, perhaps not a normal topic when one is considering the virtues of heating with wood. But for us, heating with wood makes maple sugaring a relatively easy task.

In an average year we produce four gallons of maple syrup. In the process we boil more than a hundred gallons of water. But to us that is not a big deal because we are used to adding hundreds of gallons of water vapor to the inside of the house each year to raise the humidity. So why not boil the sap on our woodstove?

We had heard horror stories from other people who had turned their house into a miniature sugar shack. Lots of excess humidity caused wallpaper to come off the walls, and maple sugar vapor created sticky walls. I figured the excess humidity problem was easy to solve, just do a little boiling each day. We already knew it was beneficial to add six to eight gallons of water vapor on winter days, so it was obvious to me that a moderate addition of water vapor from maple sap would not be a problem.

The more challenging problem to solve was how to avoid sticky walls. By experimenting I concluded the trick is to avoid rapid boils of the maple sap. With this in mind, I try to keep the temperature of the woodstove under 400 degrees. If the trees produce more sap than I can keep up with, I store that concentrated sap for further processing when the sap production diminishes.

The above description focused on how we made our woodstove an integral part of our maple syrup production. For those of you who want to try this on your cellar woodstove (for fear of sticky walls, I would not do this in the living quarters of the house), I should share with you how we obtain the sap.

I use a battery operated drill to put a slightly downward sloping 5/8 inch hole into the maple trees (some of the newer taps require a smaller hole). The taps are hammered into the tree, gently to avoid splitting the wood. Instead of using the traditional metal pails with covers to gather the sap, we use one gallon plastic milk jugs. A utility knife is used to cut a ¾ inch square hole in the milk jug, perhaps three inches below the top, opposite to the handle. The milk jugs are then pushed onto the tap using this hole. Covers are left on

the jugs to prevent debris and bugs from getting into the sap. Now when we go out in the evening to collect the sap from milk jugs, we say we are going out to milk the cows.

Maple Syrup and Sugar Candy

How can you tell when enough water has been boiled off and the maple syrup is the right consistency? That's easy, it is just before the liquid boils over! As our expertise increased, we learned how to read the bubbles. Large bubbles in the boiling sap imply there is much more water to evaporate. As the bubbles get smaller, the process is getting closer and closer to completion.

Also, as the sugar concentration increases due to the evaporation of water, the boiling point of the mixture increases. By using a candy thermometer, you can observe when the boiling point has increased by a couple of degrees Fahrenheit. To make maple syrup, the temperature must be raised to about 30 degrees above boiling. Since the little water that remains in the syrup is superheated, the boiling process becomes very active and frothy − it's time to quit, unless you want to make maple sugar instead of maple syrup.

We have made maple sugar candy and were amazed to see it emerge from our candy molds looking like a store-bought product. However, it helped that Evelyn MacKinnon had previously demonstrated her candy-making techniques. Before trying it yourself, I suggest reading a book or detailed article about maple sugar production. That may save you lots of trial and error mistakes.

The readily available information about maple sugaring usually omits one important fact – how much work this is for the small time producer. The commercial operations run plastic tubing from tree to tree so they don't have to "go out and milk the cows". For us small time operators, there is a lot of hauling of sap, not to mention boiling and boiling to finally produce the syrup. So why do we eagerly look forward to maple sugaring each spring? We have kinship with alchemists – we produce liquid gold from what appears to be just water. It really is cool!

SANDY

The web ad

Dick and I met via the Internet. I chose that approach because I had lived in the same small community for fifteen years, raising my children, and felt that if there had been anyone extremely compatible in that circle, I would have met them by then. So I needed to search further afield. Dick chose it because it suited his no-nonsense scientific nature to cut right to the research and skip the aimless trial and error process.

My web ad not only gave Dick a good indication of who I was, it should do the same for the you, so it's included here.

I spent my summers as a kid catching crawfish for pets, playing with my little sister and the neighborhood boys, riding my bike to the local riding stable to feed carrots to the horses, running barefoot down our dirt road, and swimming – and my other seasons being a good little student, ice skating on our lake, going to Girl Scouts, and translating my mother's Scottish handwriting on notes for my teachers who could only read Zaner Bloser writing.

I spent high school getting good grades, attending dozens of games, prompting for the school plays, and avoiding the fast onrush of mature social activities I knew I wasn't ready for.

In college I became an elementary teacher, then went back to college twice more until I'm now a counselor and teacher of psychology at a local community college.

In between college times I taught for two years in Michigan, then headed overseas to teach for the DOD in Germany and England – still just regular old American kids, but in a setting that allowed me wide opportunities to travel.

I married, had two children, but divorced after seventeen years of futile efforts to please.

I have close relationships with my children – who were interesting and exciting to raise – and with a varied group of wonderful friends.

I exercise most every day in the summer, running on trails in the woods behind my home or using the stationery bike or stepper in my TV Room. I also usher one day a week for our local summer theater and yard sale most weekends – probably a throwback if stereotypes are to be believed – from my frugal Scottish ancestry. I have three cats –- a black cat that has seizures, a mean little tabby and a wonderful generous-spirited orange Maine Coon Cat that makes up for the travails with the other two.

For the physical stuff, I'm 5'3" (and around 117 with all my summer exercise) with brown hair and hazel eyes. I like myself when I look in the mirror, even if I don't mistake myself for Farrah Fawcett. I'm the kind of person that strangers often smile and say 'hi' to.

I'm looking for someone who is fit and happy with himself and his life, tolerant, probably around seven years or so on either side of my age –- although many of the friends that I feel real kinship with are a good deal younger than me.

I know a good relationship can add immeasurably to simple events of everyday life. And I would dearly love to add that true kind of richness to my life.
Please respond if any of this has struck a responsive chord.

Dick found that it did connect with his life in many ways – his summers at Cobbetts Pond and his future hopes to travel and see much of the world with a companion. He sent me an email and we wrote back and forth for quite a long while, having decided to meet once I returned from a trip to Kauai to see my sister. We graduated to phone calls and he even got up at two in the morning several times to call me in Hawaii, taking into consideration the time change and picking a time when he was relatively sure we'd be home. I felt we knew each other quite well before we had met face-to-face.

Selling the house

Selling the house was a pretty wrenching experience for me. My children felt it was "home" and, although neither had lived there for several years nor planned to move back to the area after college, they were quite against my selling it. They wanted me to rent it. But after all the roof shoveling when winters brought massive snows and basement bailing after deluges, I wanted to be free from those responsibilities when I moved in with Dick. And with his love of his property – as evidenced in the last previous hundred plus pages, there was no doubt that if we were going to live together, I would have to be the one to do the moving. In the meantime we alternated weekends at each other's houses.

There was a bit to do to get my house ready to sell. One of the two septic systems had to be replaced. The first time the house went on the market, the buyer placed a lot of restrictions on the sale, wanting me to put a large amount in escrow to replace the other septic system, which had given me no problem to that point. Accepting his offer would have brought the price of the house down almost to what I had bought it for 16 years earlier. So we decided to reconnoiter, take the house off the market for the winter and work to improve its appearance, painting most of the walls and even sanding and finishing the hardwood floors we had found were under many of the carpets. We spent many a night sleeping in sleeping bags on the floor of my cleared out bedroom after working until nine at night. But it did pay off and the next spring the house sold for a reasonable price. Life was moving on.

Thoughts on moving

I had thought long and hard about moving, so the transition brought very few surprises. We listened to different types of radio shows and I missed my Imus fix some mornings. And I knew from past experiences that, despite our best intentions and promises, getting together with my old friends would be difficult with an hour and a half's drive in between. We held a massive yard sale to sell off a lot of items I might no longer need, and every so often when I needed something here and went to find it, I found it was among the discarded items. Irrational feelings of loss would plague me after such a fruitless search and still do today at times. I liked my 'stuff" and with Dick's more minimalist approach, something had to give.

But the best of my stuff is still with us and adds personality to Dick's basic furniture and fixings. I have three large leaded hanging lamps in the living room, dining area, and sunroom – two of which were acquired at yard sales in this area last summer. I still love the lure of the fantastic buy and go to yard sales frequently, adding more stuff to

the house – which Dick does a good impression of tolerance for most of the time. My father's oil paintings adorn many walls and we use my bedroom set in our bedroom

Moving emotionally from a place where you felt great comfort jars you out of the familiar. For a while the unfamiliar holds its fascination, but it is a process, not an overnight happening to really inhabit the place you've moved to. And three years later I'm still somewhere in that process. I can walk the trails on the property and know where they lead and how to get back to the house. Today I noticed that I can drive the familiar roads mindlessly and still get to where I intended to go. The faces of local shopkeepers are familiar and I even occasionally run into someone I know around here – not as often as in my old environs, but enough so that I don't assume any longer that all the faces in the supermarket are strangers. I volunteer in the library and still get a kick out of walking in there and having the rest of the staff greet me by name. I have a great partner who understands my sometimes ambivalence and is always encouraging. I have a new and exciting life. I may sometime have a pang of nostalgia for what was, but I'm getting there

OUR NEW LIVES

When we first met, both of us were working forty plus hour a week jobs. Because of the distance between our homes, that implied most of our together time was limited to weekends. Dick had a lot of experience with retiring and highly recommended it as a joint venture.

Dick's Retirements

I have had quite a few "retirement" parties in my day. My first retirement was in 1989 when AT&T/Lucent was downsizing a little. I returned two weeks later as a contractor-consultant and periodically disappeared when a contract was up, only to usually return relatively soon. My most demanding assignment was being responsible for a major project coming to fruition on time. I was rewarded very well, but averaging 60 hours of high pressure work a week took its toll. Shortly thereafter, I had a quadruple heart bypass. With my genetic history, the surgery would have probably happened eventually, but overworking certainly sped it up.

The good news was that I never had a heart attack. Now that I am on potent anti-cholesterol medicine, I am in great shape. In fact, I did return to Lucent for another consulting assignment. Then less than a year after Sandy and I met, Lucent Technologies struggled in the collapse of the telecommunications bubble. For the company to remain a viable entity, Lucent had to drastically cut costs, so well paid consultants such as I became a thing of the past. And for me it was about time.

So am I still a workaholic? If being a workaholic is determined from the number of things accomplished and the ongoing list of things yet to be accomplished, then I am guilty as charged. But now that I am retired, I don't give 40 plus hours a week to a company. Having more discretionary time, I claim I do very little work any more. What I do is lots of play! Because I am turned on by accomplishing things, I enjoy most things I do. If I clean the house in the morning for half an hour, the reduction of clutter is rewarding. Picking up rocks to help clear a new road is great for flexibility and strength training. Mowing the grass with a people-propelled lawn mower is great aerobic exercise with little jarring to the knees (my personal Achilles' heel). I do a project while it feels like play, and stop when fatigue or boredom are threatening to make it become work. Later that day, or the next day, I'll be back out there playing at "pick up the rocks." So I still do lots and lots, but as a playaholic.

Sandy's Retirement

My retirement and moving to Sandwich happened simultaneously, so it's hard to separate changes from one or the other. I had a very satisfying career, teaching psychology, counseling students, and running a grant-funded program which financially assisted single parents in attending college. My colleagues were the best group of people I had ever worked with. Helping our students, many of them the first to attend college in their lower socioeconomic families, was as much a mission as an occupation.

I retired at the end of the spring semester, so it was much like my normal life for the summer. When fall came, I did feel things were not as they should be, with others going back to school. But more than that, I felt like my purpose in life was gone to some

extent. I applied to substitute teach at the local elementary school, but that proved difficult with our travels. Now I volunteer at the town library one afternoon a week, which gives me both a connection to the community and a feeling of usefulness. And, unlike volunteering to help with students, if I go off on a trip and miss a week or two, no one feels left out or neglected.

I miss getting a paycheck too, of course, but my expenses are minimal compared to before so I manage to stay within my pension payments most months. I'm settling into retirement our style, with trips scheduled to give something exciting to look forward to every few months. I know I have a very good life here which more than compensates for all the changes this adventure has brought.

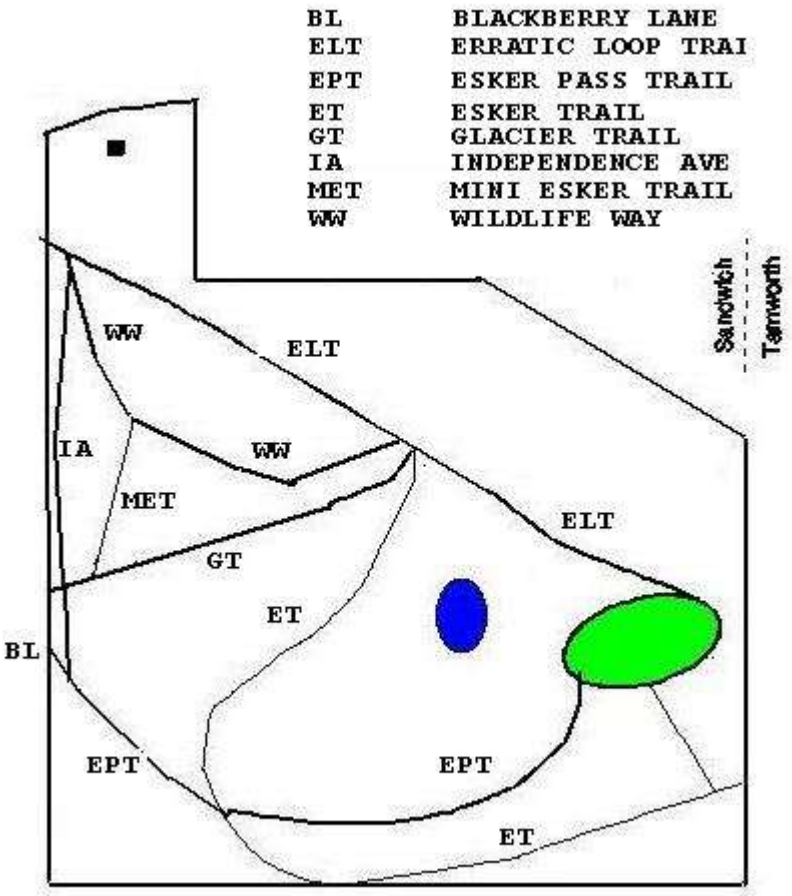
Our First Trail

When Sandy and I joined forces, there was still one more major trail building endeavor in my plans. It provided her an opportunity to understand what had occurred before she arrived on the scene. And it was fitting that the reason for this new trail was related to my new life.

The Tree Farm had been split and terminated along with my marriage; however, the trail system was still interlaced. When going for a hike, it is nice if the route forms a continuous circuit, instead of having to retrace some of the trails; and the trail system had been developed with that in mind. But Glacier Trail, an integral part that strategy, now has two separate owners. They are on good speaking terms, but now decidedly independent entities. So I decided to remedy the trail situation by creating a new trail. It would be entirely on my property, but close to the boundary with Julie. In the spirit of separating the trail system it was christened Independence Avenue.

The following map shows the current trail system on our downsized 60 acres. Even though the trails I created while married to Julie are no longer part of my portfolio, they are still part of my heart and often walked by Sandy and me. Similarly, Julie and her dog agility students still go for walks that include this property. And I have healed enough so that I still remove fallen trees from Julie's trails, with firewood and fond remembrances for my rewards.

Map of Trail System − Current



ROCKS ARE US

Sandy's Rocky Background

I grew up in Michigan, land of diverse geology – at least compared to the mostly granite locales I've experienced in New England. We could find fossil corals, brachiopods, and crinoid stems just helping my mother in the garden. Vacations in the Upper Peninsula opened up the world of rock hunting for agates, thomsonite, jasper, and chalcedony on the beaches and native copper and datolite in old mine dumps. I was hooked and have been a rock lover ever since – the pretty ones which we polish and keep in dishes in the house and the natural ones we find outside which seem to reflect the characteristics of the land as a whole.

I have never met a rock I didn't like.

Stonewalls

Before Sandy arrived on the scene, I had already fallen for rocks. I didn't know much about the beauty of small specimens, but was moved by stonewalls. That was to prove helpful in the landscaping of my new house.

I initially thought the front lawn of the house would have a substantial slope because of all the gravel that was added to solve the drainage problem. By my ideals, the best looking front lawn is relatively flat, with a slight slope away from the house to disperse rainwater. With hindsight, the solution seems as if it should have been obvious, but there was a month's delay before I finally had a eureka moment – the surface could slope gently to the edge of a yard where there would be a stonewall. The stonewall, acting like a retaining wall, would permit the elevation to step down to meet the existing terrain.

New Hampshire is known for stonewalls. We are not called the Granite State for nothing. To make their fields more usable, the early settlers removed countless rocks and created thousands of miles of stonewalls. I love stonewalls, their link with those early settlers is very tangible. Even though many acres of this property previously were field, there were no stonewalls here when I purchased it. By a quirk of the glacier, very few big rocks were left here – except for the house site!

So there were many benefits to have a stonewall near the house – it would look quaint, help produce a nicer front yard, and make the rocks at the house site an asset instead of a problem. But my schedule was already full, plus I had never built a stonewall. Fortunately, the WODC trail crew leader for that year had some spare time before the trail crew arrived, so I hired Erik Flood to do whatever was possible during those few weeks. I thought Erik would be perfect for the job because he was used to working with heavy rocks, having previously built rock stairs during forestry related work.

Even though a stonewall in front of the house was of paramount importance to me, starting that project was not possible then because of the ongoing house construction. So I had Erik work start a stonewall along the boundary of Clarinda's and this property. This stonewall would also be visible from the yard and thus also appealed to my aesthetic nature. Plus stonewalls are traditionally used for boundaries.

By the time Erik had to transition to being trail crew leader he had finished perhaps a quarter of the boundary wall. I was pleased with what he had done, plus had learned

some pointers on stonewall construction. For example, make sure the rocks like where they are located. If you roll the rock a little away from its chosen position, it should roll right back when you let go. And if you sit on the wall, it should feel sturdy.

After house construction was finished, my son Rick, his wife Michelle, Randy and Rickie came for a long weekend. Rick being a workaholic like his dad, volunteered to help with the front wall. Not only was he a great help, he has an aptitude for rock work.

After that weekend, I was on my own (except for Jaws) with stonewall building. Trial and error was a great teacher. By looking at my work and comparing it to other stonewalls, I came to realize that stonewalls look better when the rocks are oriented in the horizontal position. That is, their longest dimension should be parallel to the ground. This and other hard to define criteria improved my ability to critique a stonewall. And being a perfectionist, a lot of my stonewall was given a failing grade – so down it came! Now I am proud of the stonewalls I have built. Not bad for a former nerd.

Gathering Rocks

On our trips we try to gather rocks for our ongoing projects which have included front steps, front walk, and patio under the sunroom. When the trip contains a plane ride, we are of course restricted in how much we can bring back. But still, we have amused and confused airport baggage screeners! Road trips to Michigan and Nova Scotia yielded impressive hauls. In particular, the patio floor has some nice fossils from Nova Scotia. But we also have small stones from Greece (white marble), France (a discarded cobblestone), Norway, and Costa Rica incorporated into the patio floor. The floor has become a story of our journeys and will continue to evolve as we replace more commonplace stones with significant ones from our continuing travels.

In spite of our travels, most of our building-project rocks have come from this property. Especially when the backhoe is participating in earth rearranging, lots of attractive flat rocks are uncovered. Flat rocks are essential for steps, walks, and patios. If the rocks are not needed immediately, they are spread out in a clearing so they can be cleansed by the rains.

When we walk the trails, we play a game that we each need to find a quartz rock as our admission back into the house. These small, white quartz rocks are most visible after a rain when they are gleaming from their bath. We deposit these small quartz pieces beneath the drip lines at the front and back of the house, preventing erosion and looking pretty as well.

Stone Front Steps

During a remodeling of Julie's house, as she put her signature on the house she now solely owned, a new front porch was built covering a space where there had been a rock edged flower garden. And to lead to that porch, a lovely set of curved stone steps was constructed by a mason. I was glad to see that many of those flat stones from the border of the front flower garden, stones gathered throughout the land over a period of years, were put to a good use in constructing the steps.

Sandy and I liked Julie's new steps so much we decided to replace our wooden front steps with stone steps. The project had the possibility of yielding a great sense of accomplishment and creating something beautiful. But it might also give Sandy a chance to bond with the house by contributing something new to its construction.

Neither one of us had done masonry work before. As part of the education phase of stone step construction, I took pictures of Julie's steps and studied them at my leisure.

One of the first things that was obvious was that many stones really had to be flat on two surfaces, not just one. The top of a step has to be flat, but so does the front. We discovered we had a dearth of "two flatters" in our collection and had to search for more. During this time period, in 2002 and 2003, I was in the process of constructing Independence Ave., and that project had a side benefit of uncovering many good rock specimens. So our rock collection came to be sufficient.

Before we started the actual step construction we took a wonderful trip to Nova Scotia where we met a cousin of mine I had just learned existed, Shirley Pineo. What a coincidence, the same last name as Julie's maiden name. Because of Shirley's extensive genealogy research, I learned Julie (and thus Heather) and Shirley's husband Don are actually related! That interesting discovery makes it into this section because Don is a retired mason and I picked up some pointers from him. Don is a *good old boy* and the most interesting tip I learned from him was that peeing on your hands can counteract the effects of mortar. Cement is a base, while urine is acidic, so they tend to neutralize each other. To save Heather embarrassment, I'll leave unrecorded whether or not I utilized that fascinating tip.

Prior to constructing the new stone steps, the old ones had to be removed. Per usual, Ned had built those stairs to last. At five hundred pounds, they would have been a challenge for a normal individual to remove, but being a backhoe enhanced specimen I had no problem. Once the wooden steps were removed, I learned an amazing fact when I tried to render them into small pieces for easier disposal − they were practically indestructible! I gave up trying to remove the amazing quantity of very large nails and resorted to the backhoe again. I placed the hoe on top of the steps, pushed down with all of the force of the backhoe which lifted the rear wheels off the ground, but those steps only flexed, they did not even crack! Ned, you out did yourself. Only by concentrating the backhoe's force, by having only the hoe's teeth contact the stairs, was I eventually able to overcome.

The next phase of our stone step construction was to dig a six inch hole for a slab footing. My theory was the stairs would then move as a unit if there were any motion due to frost. The six inch depth was an intuitive guess. To give the slab extra strength we added lots of small stones of two to three inch diameter to the concrete. Of course, such stones were easily found on this land. And after some cold winters, the stairs have passed their practical exam.

During my research I learned the difference between mortar and concrete. They are both produced by as a mixture of cement and sand, but mortar uses "smoother" sand than concrete. Not knowing how smooth our sand was, I only used it only for the concrete preparation since that was less critical than the mortar which had to bind the stone steps together. So I bought the mortar in premixed bags, but we manually mixed the concrete by the time honored small contractor method of a wheelbarrow and hoe, instead of a small portable concrete mixer. Sandy thought it quite similar to mixing a cake but a lot more physical energy was of course required.

We were partners too when it came to rock selection and their placement in the steps. My suggestions came more from their physical properties. I especially focused on choosing rocks that would be easy to bind together with the concrete. Sandy was especially helpful in selecting rocks to complement each other's colors.

Creating those stones steps was one of the most satisfying projects either of us has every done. We came to consider them as our stone sculpture. They surpassed expectations, coming out much better than we even anticipated. Be sure to look at the

construction and finished product photos that are include on the CD. Pictures of other rock accomplishments are included there too.

PHILOSOPHICAL MEANDERINGS

We have more numerous and more wonderful belongings than our parents, and the technological possessions of our children will far surpass ours. We are brainwashed to think that happiness can be bought, but past a relatively low threshold additional purchases do not yield that nirvana people are searching for.

What brings happiness is family and friends, a purpose in life, and for some, a religious connection. In retrospect, the experiences related in this book have been about one of the major contributors to happiness – a purpose for my life. Having a symbiotic relationship with nature has ephemerally benefited this forest, and also enhanced my fleeting life.

Living here has given me an opportunity not to focus quite as much on material possessions. Gathering wood, heating the house by its energy, maple sugaring, making blackberry wine, having a garden, foraging for rocks are all energy intensive activities that are easy on the pocket book and good for the soul. This tree farm has become a major focus of my journey through life.

The present condition of the forest is a result of that journey. Whoever becomes its temporary landlord after me can share in the result of its metamorphosis, but as is so often true, the journey was the exciting thing, not the destination. For a goal oriented person, I have been truly blessed by what nature has shared with me. And I like to think, nature has benefited somewhat from my adventures.

It was fascinating to learn how the past shaped this forest. Glaciers deposited gravel that gave us so much material for our road system, and left the esker, a distinguishing characteristic of this land. The remnants of the natural dam remain where Esker Pass is now located. The treed swamps were once large ponds. The barbed wire now going through the center of trees was strung by farmers a hundred or so years ago when clearing the forest and fencing their animals. Mounds of smooth stones attest to fields that were derocked for planting crops. Gnarled apple trees grow on a south facing hill by a cellar hole not far from one of the houses I have owned. Large pines dominate the forest, enabled by the action of The Hurricane of 1938 and red pine groves were planted when the state upgraded a gravel road to form the Route 113A.

What will be my semi-permanent contributions to this ongoing metamorphosis? I can only consider them semi-permanent because I am all too aware of the finiteness of life. This country was settled by Europeans less than 500 years ago. Five hundred years from now there may be wall-to-wall people, or perhaps no people here. My fertile imagination likes to play these mind games. Considering a myriad of possible futures helps give insight into the significance/insignificance of my life. I'll share one of my possible scenarios.

Minor trails that were once important to me, but are now no longer maintained, will be harder and harder to find in the following decades. A hundred years from now, there may be a viral epidemic drastically reducing the population. Another hundred years and the three houses that I built may be remembered just by their cellar holes. The network of roads will be treed again, but still readily discernible from the flat ribbons of land that meander throughout the property.

A half millennia from now, the Hurricane of 2538 may devastate the forest, the fallen giants pulling up mounds of earth with their roots and the trunks contributing to

further mounds when they decay. The former roads may then only be discernible to trained archeologists. Two to three millennia from now the ponds may be converted to treed swamps by the ongoing assault of weeds. A hundred thousand years from now the next ice age may occur, starting the process all over again.

In the meanwhile enjoy your journey, and may this planet and its varied inhabitants benefit from your existence.

APPENDIX - Timeline

1930's	Most recent timbering before Dick's purchase
1941	Sandy was born in Pontiac, MI
1942	Dick was born in Lawrence, MA
1950's	Red pine plantations planted on the property as part of gravel reclamation projects
1963	Dick and Carol marry
1975	Purchased the 155 acre parcel of land in Sandwich. Purchased from Stan Coville Erratic Trail's established as a rough trail
1976	Dick and Carol divorce Esker Trail created Whiteface View created Mill Brook Trail started Glacier Trail started
1977	Wet & Wild trail constructed Pine Street started
1978	Work is started on my first house, later to be referred to as Clarinda's Cape Dave Weathers and I look at potential pond sites
1979	Scott Aspinall of Forest Land Improvement tours land. A timber sale cannot be arranged because the woods are precommercial. Julie and I meet Test hole is dug at the pond site
1980	Dick and Julie marry Our Kingston NH house is built
1981	Major blowdown of trees due to fall windstorm
1982	TSI work is started on the red pine plantations Drainage ditch created at pond site Clearing of pond site commences

1983	Heather is born Big Pond is created Pine Street extended to Mill Brook Trail
1984	Tree Harvest I – Rock Playground
1986	We sell Clarinda's Cape Tree Harvest II – Erratic Site & Rock Playground Our barn is built by Ned Coville
1987	Tree Planting via Bob Behr Field gravel excavation site openned Tree Harvest III – Blackberry Crossing
1988	Excavation at the field completed Blackberry Lane and Blackberry Crossing created Glacier Trail upgraded Esker Pass Trail initiated
1989	Tree Harvest IV – Field Site & Blackberry Crossing Wildlife Pond site cleared
1990	Dump truck purchased Septic system and well for new house
1991	Purchased Jaws, my backhoe
1992	Moved into our new house, becoming permanent residents of Sandwich Agility Field initiated
1993	Agility Field completed White Mountain Agility School started Wildlife Way trail created Love Hill Trail created
1994	Birth of Wildlife Pond Esker Pass Trail completed
1999	Dick and Julie's split
2000	Land is subdivided Dick and Julie divorce Dick's new house completed Stone walls build
2001	Dick and Sandy meet

2002	Sandy sells her house, joined Dick
	Independence Avenue created
2003	Stone steps built
	Len Marino died
	Clarinda Philips died
	First maple sugaring
	The vegetable garden
2004	Maple sugar candy
	Patio rocks
	Extension of stone wall