

Copper mining

STRAFFORD HISTORICAL SOCIETY

Strafford, Vermont 05072

6 February 1997

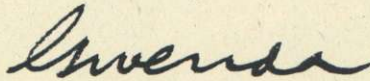
John Dumville  
Historic Sites Chief  
Vermont Division for Historic Preservation  
135 State Street, Drawer 33  
Montpelier, Vermont 05633-1201

Dear John:

I enclose the materials you requested with regard to the proposal to erect a historic marker commemorating the work of Isaac Tyson.

We would be grateful if you would pass them along to the Senate committee that is working on this matter and hope you will let us know if there is anything more we can do.

Sincerely,



Gwenda Smith  
Historian-Curator

Johnny Johnsson  
1821 Fawn Way  
Finksburg, MD 21048  
December 31, 1996

Gwenda Smith, Historian-Curator  
Strafford Historical Society  
Strafford, VT 05072

Re: Proposed Historic Sign Text

Dear Gwenda:

I trust you received the Isaac Tyson press release in good order. I just had a couple of thoughts I wanted to run by you.

Historian and writer Collamer Abbott and I have for some time mulled over the idea of promoting well-placed historic signs or roadside markers commemorating the significant accomplishments of the Vermont copper industry in Orange County. Local residents as well as tourists might find these interesting much as they do existing historic signs. Down our way Civil War historic signs are particularly popular and informative.

Consequently, Collamer and I have proposed text for what could be the first Vermont copper mining history roadside sign of a possible series of such signs. The location of the sign should be near "Furnace Flat" (or "Copper Flat" as it is sometimes called) along Route 132 (According to my map the road number coming up along the Ompompanoosuc River toward S. Strafford), but not too close to the historic copper furnace site to attract attention that would disturb the site. There used to be a pull-off located there which is now obstructed. I know there are also other historic factory remains and stone bridge abutments from the 1850's on the North bank, whereas the furnace site was on the South bank downstream a short distance. The Ely Mine, Elizabeth Mine, and Corinth Mine sites also have good potential for historic signs in the future.

Anyway, do you know how we could pursue or promote this effort? Who can sponsor this type of project and what state or local agencies are involved? How much does a sign cost and who could possible underwrite it? What criteria is required for wording? Would you be willing to be involved in such a worthwhile effort?

Since Isaac Tyson, Jr. received his recent Mining Hall of Fame recognition partly as a result of his pioneering copper smelting work in S. Strafford, the following two texts are possible wording for a historic sign such as I described:

1. In 1834, Isaac Tyson, Jr., and Daniel Long of Maryland, the Binney and Reynolds families of Boston, and others were involved in early copper smelting near here. Furnace Flat was the site of experiments with a hot-blast system invented by Tyson, using ore from Copperas Hill and anthracite coal from Pennsylvania. This may have been the first use of a heated blast for smelting copper in the U.S.

2. A short distance south of here, early metallurgical experiments were carried out on Furnace Flat beside the Ompompanoosuc River. In 1834, Isaac Tyson, Jr. of Baltimore, MD, invented a hot-blast system using ore from Copperas Hill and anthracite coal from Pennsylvania. With the assistance of others and financial support from the Binneys and Reynoldses of Boston, Tyson may have been the first to use a heated blast for smelting copper in the U.S.

Anyway, these proposed texts are a start in figuring a way to better promote the history of Vermont copper mining accurately for the public to appreciate. Fraser and I do hope to get back up to Vermont early this summer, maybe in June. Collamer may be back from France by that time. I would certainly like to meet you and also find out about what research files on copper mining the Strafford Historical Society has, particularly the activities at the Elizabeth Mine in 1883, 1888, and the 1898-1902 time period. The 1888 photo you provided in the Valley News article was excellent!

I look forward to hearing from you when you get a chance. I hope your winter is not too severe. We had cold weather, but now it is wet and warm.

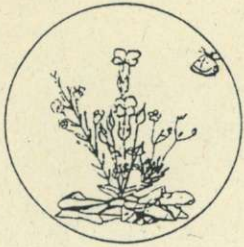
Very truly yours,



Johnny Johnsson

JJ:hbj

CC: Collamer Abbott, Jim Wilson, Richard Wilson



## Soldiers Delight Conservation, Inc.

5100 Deer Park Road  
Owings Mills, MD 21117

**PRESS RELEASE: SOUTH STRAFFORD, VERMONT, August 1, 1996  
concerning ISAAC TYSON, JR.**

One of Vermont's pioneer 19th-Century industrialists, Isaac Tyson, Jr., will soon be inducted into the National Mining Hall of Fame and Museum of Leadville, Colorado. At the Hall of Fame's Annual Banquet to be held on September 8, 1996 in Las Vegas, Nevada, Tyson will join a roster of prior inductees including President and mining engineer Herbert Hoover, rock-drill inventor Simon Ingersoll of Ingersoll & Rand, and controversial labor leader and United Mine Workers of America President John L. Lewis. Tyson is to be honored for his early pioneering achievements in the fields of mining engineering, industrial chemistry, and metallurgy.

Isaac Tyson, Jr., son of a wealthy flour merchant, was born in Baltimore in 1792. One of his most noteworthy accomplishments was the establishment of the domestic chromium mining and chemical industry and the monopolization of the world chrome business until 1850. Although chromium had only been discovered in 1797 in France, by 1810 Tyson had identified heavy, dark rocks from Bare Hills near Baltimore as chromite. He then pursued a lifetime quest to develop chromite and other minerals. Educated in France in geology, mineralogy, and chemistry, Tyson travelled the Mid-Atlantic region seeking serpentine barrens hosting chromite deposits. He purchased, leased, and developed these resources to supply domestic and European markets with this valuable raw material to be used in manufacturing yellow paint pigments. He established chromite mining districts including Soldiers Delight near Baltimore and the State Line District straddling the Maryland and Pennsylvania line. The Wood Mine in Lancaster County, Pennsylvania was the largest domestic chromite mine in existence. By 1845 Tyson successfully patented and manufactured chromium compounds after several failed ventures. His factory later became the world-rekknowned Baltimore Chrome Works in Fells Point, operating continuously for 140 years.

Much of Isaac Tyson, Jr.'s influence was seen in Vermont. He pioneered developments in copper, with significant involvement in Vermont's Orange County mines. He was also instrumental in the birth of mine-site smelting in South Strafford, Vermont. Granted a patent in 1827 for the manufacture of copperas, or chemical iron sulfate, Tyson became involved in the operations at Copperas Hill in South Strafford. He became particularly interested in the copper content of the large iron sulfide deposit. He joined in partnership with investors from Boston in this early copper mining and smelting venture and secured local mineral rights. In fact, 1833 found Tyson attempting to smelt copper ores using anthracite coal and a hot blast. This was a first in the United States and coincident with initial domestic patents for similar iron furnaces. To superintend these operations required Tyson to travel to Vermont for extended periods of time. The documented journeys of 1833 and 1834 from Baltimore to Vermont with his young family by steamboat

and stage are quite interesting. His local business relationships included both Senator Justin Smith Morrill and Jedediah Harris of Strafford Village.

Tyson also held mineral rights and worked the large copper deposit in South Vershire that later became the famous Ely Mine. His son James Wood Tyson later developed his father's holdings in South Strafford into the Elizabeth Mine which operated as recently as 1958 and was one of the most productive copper mines in the East. Tyson later operated a small copper mine in Waterbury. He was also involved in early manganese mining in Vermont and Virginia, sponsored exploration for copper ores in Cuba, and exploited magnesite deposits located in the serpentine barrens of Maryland and Pennsylvania for the production of epsom salts. He was a leader in other developments in the copper industry that followed and highly involved in the establishment of Baltimore's copper smelting enterprises.

Tyson also established a major iron furnace in Plymouth, Vermont, manufacturing cook stoves and pig iron. The recorded story is that he discovered large deposits of iron ore while crossing the Green Mountains in 1835 near the Black River. He also notices the large tracts of woodland available for charcoal and limestone deposits for flux. He secured these varied resources required to operate an iron furnace and built his efficient, hot-blast charcoal furnace in 1837. He created a manufacturing village and his business representatives operated the furnace successfully for years. Today the hamlet of Tyson, Vermont, named for Isaac Tyson, Jr. is located on the shores of Echo Lake in Windsor County. Tyson Stoves cast during the late 1830's and 1840's are still encountered from time-to-time and feature a ship emblem, a symbol of Tyson's Baltimore roots.

Tyson died in Baltimore in 1861 and not only left behind a variety of successful business ventures to his sons, but also a cadre of practically-trained individuals in the mining and smelting fields. A devout Quaker and abolitionist, Tyson studied constantly and determined to find better methods and materials as a pioneer in his fields. Isaac Tyson, Jr.'s nomination to the National Mining Hall of Fame was sponsored by Mining Historian Johnny Johnsson and Ranger Fraser Bishop of the Soldiers Delight Natural Environment Area of Baltimore County, Maryland. Endorsements of this recognition effort were supplied by a number of individuals and organizations including surviving Tyson descendants residing in South Strafford, Vermont. For an early pioneer from the East to be honored in this way is quite an accomplishment in a field dominated by the West.

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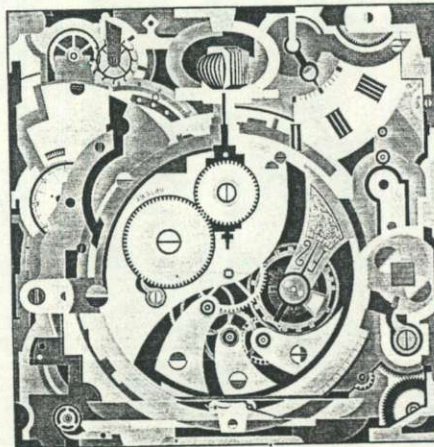


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Copper Mines

WINTER 1988  
 VOLUME 3/NUMBER 3



**THE COVER:** Precision timekeeping was still a matter of gears, fine metals, and craftsmanship when the artist Gerald Murphy painted *Watch*, in 1925. In 1949 chronography entered a new age when the introduction of the atomic clock gave the world a timepiece more accurate than the stars (page 42).

DALLAS MUSEUM OF ART, FOUNDATION FOR THE ARTS COLLECTION, GIFT OF THE ARTIST.

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**POOR QUALITY**  
**ORIGINAL** *Throughout  
Lopez -  
Jank*

# A Landscape Made by Hand

ALL PHOTOGRAPHS BY SERGE HAMBURG

The New England countryside is a product of past technology as well as nature

by Noel Perrin

**I**n the northwestern corner of Connecticut, there is a pretty town called Colebrook. The landscape is serene and pastoral. The main villages, Colebrook Center and North Colebrook, have both become National Historic Districts.

About fifty years ago a small boy spent many summer days exploring the woods of North Colebrook, near his uncle's farm. One afternoon he happened on a many-windowed old building, deep in the woods. (At least that was how it struck his nine-year-old mind. Actually the building stood less than fifty feet from an old town road.) It didn't feel like an abandoned house. Looking back, he would remember the absence of lilacs in the dooryard and the fact that no one side seemed to be clearly the front.

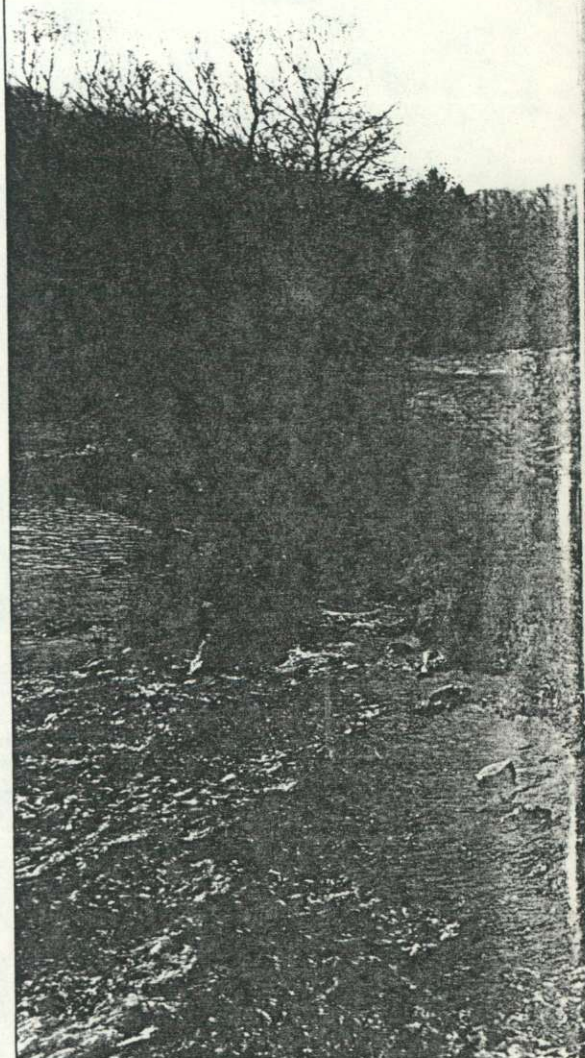
But that day he spent little time trying to figure out what the structure must have been. He was too interested in the gleam of the afternoon sun on the old, small-paned windows. Many panes, of course, were broken. But even more were not. It was as if they had been saved specially for him. Without making anything that could be called a conscious decision, he looked among the roots of the birches and pines for a stone of suitable size. New England soil being what it is, he quickly found one. He threw it. With a fine splintering crash, a pane broke.

This was too keen a pleasure not to

repeat, and he went to look for another rock. He threw again, and another pane went tinkling in. Soon he shifted to a better source of missiles: a pile of rosy old bricks, mostly fragmented, that he found on the north side of the building. Pieces of brick throw well. Before he started back to his uncle's house, he had broken every remaining pane on the first floor and most on the second. When he got home to supper, he said nothing about the adventure to his aunt and uncle. Experience had taught him that anything that much fun was likely to be disapproved of by adults.

Years later, when he was a relatively sophisticated college student, he dated a girl in Colebrook Center whose mother was trying to assemble enough panes of wavy old glass to reglaze all the windows of a colonial house she was restoring. Listening to the mother, he felt almost awed by how much history he had been able to smash in a single afternoon. By then he also knew what history it was. He knew that the building he had found was the old cheese factory in North Colebrook—one of the thousands of industrial ruins that were and still are scattered across New England. The mother's passion affected him. If given a chance, he would retroactively have saved those windows.

But another dozen years had to pass before he began to think in terms of beauty as well as history. Now a teacher, husband, and father, he had come

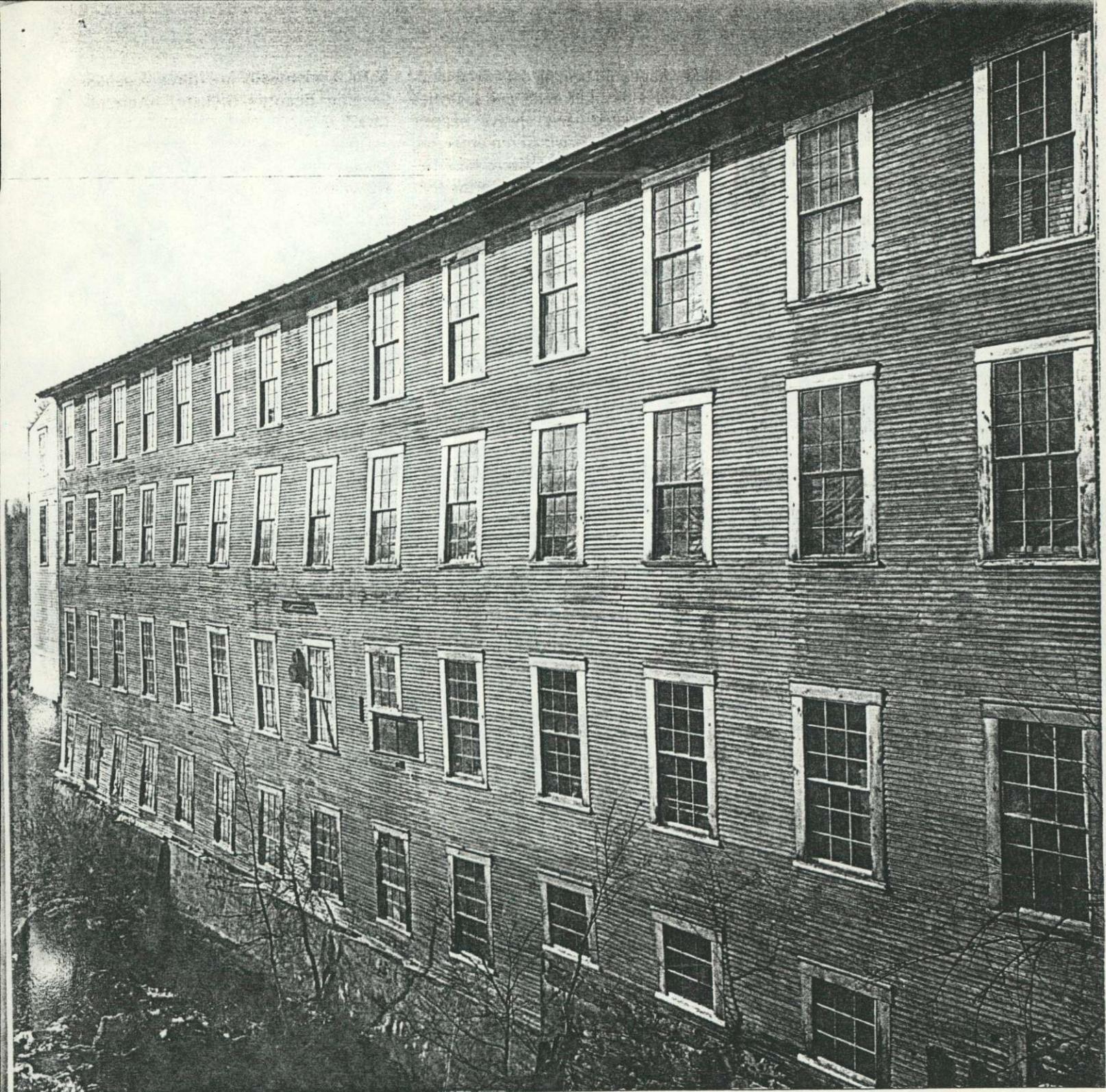


Time has warped and settled the walls of the last

to own an old house himself: an 1820 Federal brick farmhouse in eastern Vermont. He had bought it cheap because the roof had been about to fall in.

The front and both ends of the house had been modernized sometime around 1900. Among other things, the original windows had been replaced with Victorian two-over-twos—easy to clean and quite homely. But whoever





operating factory on the Ompompanoosuc River in Thetford, Vermont, to make the building seem an ageless part of its surroundings.

did the job had economized on the back. There the original small-paned windows remained: nine-over-sixes, wavy glass with an occasional tiny air bubble. Each pane was different. Those windows took a lot of scraping and puttying, and before he had finished, the grown man had fallen in love with old window glass. It now struck him that he might have destroyed more

beauty by throwing bricks at the cheese factory than by, say, chopping down the apple trees in his uncle's orchard. Apple trees grow again.

IN NO WAY DO I BLAME MYSELF FOR TAKING more than twenty years to come to see beauty in the North Colebrook cheese factory. Windows apart, it can never have been a specially handsome

building. Anyway, it was a *factory*, set down in a pastoral landscape, and I was raised in the tradition of the romantic poets. In this tradition, nature is a healing force and industry is a disease, a kind of blight. Industry attacks a green valley the way mycelium attacks a green leaf. It can leave the valley black.

The opposition to industry can be

put in religious terms as well as medical, and it often was. The most famous single reference to industry in the poetry of the romantics was made by William Blake. And what did he say? He said that "dark Satanic mills" were taking over England's green and pleasant land. God is a shepherd, as we know from the Twenty-third Psalm. The devil turns out to be an engineer.

The thought is one that precedes the romantics. Milton had it, for example. In his story God designed that green and pleasant place, the Garden of Eden. Satan meanwhile set up smelting plants in hell and went into the business of producing iron, copper, and tin. He also built the first firearms plant. Samuel Colt's factory in Hartford, Connecticut, came much later.

The thought is still with us now. You will find it, for example, in Tolkien's *Lord of the Rings*, where Saruman's fortress-factory of Isengard is a type of hell, and Saruman himself a satanic figure, master of many furnaces. Isengard (the name seems to mean "Iron Shield") is eventually conquered and redeemed by an assault of the trees, by ents and huorns, much as the North Colebrook cheese factory was surrounded and finally conquered by birches and pines.

Milton, Blake, and Tolkien were not wholly wrong either. Factories and mines do frequently blight landscapes. There is a blighted landscape not three miles from where I live—a vast, ruined slope covered with tailings from the Strafford copper mine. The mine closed in 1954; the slope stays poisoned. It will be so for many decades.

But not all mills are satanic, and I think especially few of them may be in New England, where from the very beginning there has been a symbiosis between the pastoral and the mechanical. That is, we have always had what I think is called a mixed economy. The early farmers produced and marketed handmade nails in their spare time: They were metalworkers as well as shepherds of flocks. The early mill-owners were apt to keep (and sometimes personally milk) a family cow, just as an early philosopher like Emerson raised (and sometimes personally fed) an annual pig.

The result is that we have always

had what could be called a mixed landscape. Fields and forests and factories have coexisted—not always happily but often. And it is worth remembering that though the forests were here before the first Indian, let alone the first white person, set foot in what is now New England, and hence can be called natural, the fields and the factories are both man-made. One is undoubtedly more artificial than the other, but both are, in the literal sense of the word, manufactured, since the *facture* part means "to make", and the *manu* part means "hand." Handmade fields and handmade factories in early New England: both are apt to have stone walls.

**T**he mixed landscape of my own town in Vermont makes a good example. Thetford has historically been farming country—better farmland than Colebrook, because of fewer rocks.

Even now, when the almost-insane policies of the United States Department of Agriculture, reinforced by the universal determination of teen-agers to wash down their junk food with junk beverages, are rapidly destroying dairy farms, even now Thetford farmers ship much milk. That means many cows in town. And that in turn means many beautiful pastures, because cows are wonderful keepers of fields. They can produce greensward on which the grass is so neatly cropped that the suburban lawn was developed in conscious imitation. They can clip around rocks and up to walls far more deftly than any human with a string trimmer. They will keep all trees (except evergreens) pruned up to a uniform height—namely, the five feet that is a cow's convenient reach when she has her head raised and her tongue out at comfortable leaf-flicking distance. As I write, the twenty-six acres of pasture on my own farm are in just such condition, kept so by the seventeen Jerseys and Herefords and young Holsteins that spent the summer here.

But the seal of the town of Thetford, which is rather elaborate, shows a tree-bordered lake, a good-sized factory beside a river, and a dairy farm with twin silos poking up above the

barn. Underneath are three legends: "Scenic Beauty—Industry—Agriculture."

Go a hundred feet east from the easternmost edge of my farm, and you will come to that river. You will not see any factories. The one on the seal exists, and still operates, but it's four miles upstream, on the far edge of town. What you will see is the covered bridge that takes our road, once called Mill Street, into the village of Thetford Center. Just below that you will see a partly ruined dam, and below that the Ompompanoosuc River cascading down a long series of rapids. The dam is concrete and fairly modern. A local farmer built it in 1916 and brought electricity to the village.

Keep looking. There are many birch trees and young elms (this is a beautiful place), and in the summer not all the old foundations are easy to spot. But they're there. Look over at the far bank of the little river, and you will gradually notice one massive stone foundation after another. A hundred and thirty years ago there were five mills in a row along the river here, and there were three dams, one below the other, to supply them with waterpower. Thetford Center was a mill village, but it was neither dark nor satanic.

Industry came to the village around 1806, when a couple of local men set up a carding and cloth-dressing mill. Over the next half-century more different kinds of factories lined up their waterwheels next to it than you might think possible. A carriage factory sprang up, and a factory that made window sashes and shutters. (You can still see shutters of its distinctive design all over town.) Also a potato-starch factory, a scythe and ax factory (with a one-person work force), a musical instrument factory, an axletree maker, a cabinet shop. A piece of furniture made there is now in the Metropolitan Museum of Art in New York.

Most of these "factories" were tiny—if they *had* been satanic, they would have been run by imps, not full-grown devils—and most of them lasted for only ten or fifteen years. Then the building and wheel and water rights would pass to someone else.

But wars, which invariably produce profiteers, are a great stimulus to in-

dustry. During the Civil War, and for a decade or two after it, little Thetford Center came to have several large manufacturing plants. Well, middle-sized, anyway. One, called the Noosuc Mill, was half a mile downriver from the covered bridge. It employed about twenty-five people, and it made a thick, tough, yellowish paper known as strawboard and also the binder's board used for hardcover books. A few years ago, when my wife had our kitchen remodeled, there turned out to be a double layer of that heavy yellow paper under the kitchen floor as insulation. Not too surprising, I suppose, because our house was once owned by Horace Brown, a native of Thetford Center who fought in the Civil War as an Army captain. His first move when

he came home was to buy the Noosuc Mill, and he ran it until he started a shoe factory, still farther downstream. One would expect him to insulate his own house with his own strawboard. What you might not expect is that this small-time industrial magnate would have a large barn built onto the end of his house, complete with inside silo for storing winter cattle feed. But he did.

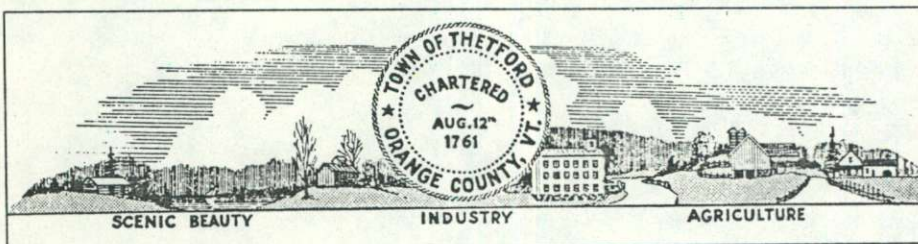
Finally, nearly a mile below the bridge, there was the woolen mill, which ran from late in the Civil War until about 1880 and which in its best days had about fifty employees. It must have been a stunning sight to see all those mills running at once, all those waterwheels turning, and the great leather belts taking the power from the wheel shafts to the machinery. The

falls may have been more beautiful then than they are now, when there are only the half-broken dam and the half-hidden foundations of some of the mills to frame the view.

Even the great villainous industry of this part of Vermont has left beauty behind it. Some six or seven miles from Captain Brown's house is another and much older copper mine than the one in Strafford. This one had its beginning back in 1820, when people living along Copperfield Brook in the town of Ver-shire organized what was called the Farmers' Company. The farmers dug a little ore by hand. They also "erected a rude smelting furnace," as a man named Hamilton Child put it in 1888. They even made a little money.

But they had neither the capital nor the technology to do large-scale mining. Serious operations didn't begin until six New York City investors bought the mineral rights in 1853 and set up business as the Vermont Copper Mining Company. They put in some serious furnaces, and by the end of the Civil War around a hundred and fifty people were working at the mine and the adjacent smelter. Then, just about the time Captain Brown came home from the Civil War to take over the strawboard plant, a still richer investor from New Jersey named Smith Ely took over what soon became known as the Ely Mine. (And the little village of Copperfield became the growing new village of Ely.) Where there had been three farmhouses in 1850, there were now a hundred families living, plus two churches and a dance hall.

Smith Ely thought big. The miners, all four hundred of them, worked by candlelight—one candle per miner. But the smelting plant went modern. By the late 1870s he had a refinery seven hundred feet long and sixty-two feet wide. He had twenty-four furnaces and seventy desulfurizing ovens. He



The Thetford town seal conjoins local natural splendor with the last factory on the river.



A Thetford field poisoned by 1870s copper smelting is good only for target practice.

**If the forests are natural, fields and factories alike are manufactured.**

was making copper 95 percent pure, where the early farmers thought they had done well to get the proportion of copper up to 12 or 14 percent before they shipped their product off to more sophisticated refineries on the coast.

Smith Ely had also produced a miniature version of contemporary acid rain. Twenty-four furnaces make a lot of smoke. Smoke of this kind contains a lot of sulfur dioxide. His first achievement was to produce a defoliation of the hillsides along Copperfield Brook as thorough and as devastating as that which later Americans produced in Vietnam. Next to go was farming up and down the valley, as the grass died. About then a new kind of Farmers' Company formed, and since there was no Environmental Protection Agency to complain to, the farmers complained directly to the mine officials. They may even have waved pitchforks in a menacing fashion. And the officers of the Vermont Copper Mining Company responded exactly as the EPA would have made them do a century later. They figured out a way to spread the pollution around, so that people in the valley would get a lot less and everyone for miles around would get a little bit more.

The technology didn't exist then to put up the kind of EPA-mandated giant smokestack that now distributes industrial pollution so freely across the United States and even around the world; but Vermont is hilly country, and an early version of pollution sharing was possible. The Vermont Copper Mining Company dug a six-foot-deep trench all the way up the side of a small mountain behind the smelting works. Today you'd probably put a noncorroding pipeline up such a trench. They didn't have the technology for that either. Instead, with men and oxen they brought stones and they made the trench into a walled tunnel. It rises five hundred feet, from where the smelter used to be to the top of the hill, and it is nearly half a mile long. All that way they capped it with huge, flat rocks—rocks as big as double beds, some of them, and four to six inches thick. These were fitted so tightly as to be smokeproof. The smoke was forced up to the summit, where it caught the wind and rode out across Vermont, to

begin its descent into other valleys.

Partly because there was never a railroad up to Copperfield, so that the coal had to come in nine miles on wagons and the copper had to leave the same way, the Ely Mine failed in the 1880s. Easier mines to work were being discovered, first in Michigan and then still farther west. But there is no ghost town, as there might be in Colorado. Dry climates preserve abandoned industrial sites indefinitely; tropical jungles swallow them up almost at once. Vermont is somewhere in between.

Today there are no traces of the seven-hundred-foot smelting plant (or the dance hall, either) except on a few acres of level ground so poisoned that trees still can't grow. There you can sometimes pick up a fragment of an imported Scottish firebrick, packed into the silty yellow rubble. Just above that spot, however, and across the brook, the once-desolate hillsides are handsome with oak and birch. Isengard is fallen.

But not entirely, not yet. The stone tunnel up the hillside is still there, now lost in trees. It is one of the most beautiful ruins I know. Some of the capstones have fallen in, and a few at the lower end are missing, presumably hauled away by people who know a beautiful slab when they see one. Where the tunnel is thus uncovered, sometimes a young tree is growing right inside it. At these roofless spots you can see the inner stonework on the two sides of the tunnel. It is better dry-stone wall than I can build, though I have been repairing old walls and building new ones for twenty years.

When I first saw that solemn ruin in the woods, I had no idea what its function had been. None of the select few people I have taken to see it have guessed either. They have imagined miners running down it in the winter, with wheelbarrow loads of ore. They have imagined water rushing down a sluice, though once we reach the top of the little mountain, and there is no brook up there where the tunnel ends, or so much as a wet spot, they've had to give *that* theory up. In the end they've had to be told, as I was. But not one has failed to be impressed, as one might be by a pyramid. The final legacy of Copperfield Village has been an ad-

dition to the natural beauty of the region, a human accent mark on the hill.

**A**ll over New England, industry comes and goes. Right now more is coming than going, at least in the part where I live. At this very minute there is a proposal to rebuild the dam below the covered bridge in Thetford Center and resume the generation of electricity. There is also resistance to the proposal, both because a lot of trees would be cut down and a homely little powerhouse built, and because a historic site would be disturbed. (The irony, of course, is that it's historic for waterwheels and other forms of power generation.)

I see no assurance that present or future waves of factory building will leave such handsome remains behind as former ones have. Many modern factories strike me as stunningly ugly. If I imagine a boy giant throwing stones at them until they are smashed, I see a ruin of concrete and plastic that would simply be a blight on our green and pleasant land. But it is notoriously hard to judge one's own time. I have seen pictures of Copperfield Village in its heyday, and it was an ugly sight, too. If I had lived then, I think I would have said that that corner of Vershire was ruined, probably forever. I think I would not have imagined people coming a century later to stare in awe at the smelter chimney.

It may be that unless we manage to kill off trees altogether (in which case we'll presumably kill ourselves off too), the alternating cycles of farm and factory will keep making the New England landscape richer and richer. At least it would be nice to think so. ■

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Noel Perrin, a professor of English at Dartmouth, is the author of several books, including *Giving Up the Gun: Japan's Reversion to the Sword, 1543-1879*. This essay is excerpted from *Mills and Factories of New England*, with photographs by Serge Hambourg, to be published this spring by Harry N. Abrams in association with the Hood Museum of Art. ©1988 Trustees of Dartmouth College, Hanover, N.H.



The six-foot-deep stonework trench that carried the copper mine's smoke up off the mountain is now a forgotten but beautiful ruin.

**Even the great villainous industry of the region has left beauty behind.**

MR. VIC ROLANDO  
83 HOWARD ST.  
PITTSFIELD, MA. 01201



GIOVANNA PEBBLES, STATE ARCHAEOLOGIST  
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# State of Vermont

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Department of Environmental Conservation  
State Geologist  
Natural Resources Conservation Council



*Mining, Copper*

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DEPT. OF FORESTS, PARKS AND RECREATION

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October 5, 1994

William Ahern, Director  
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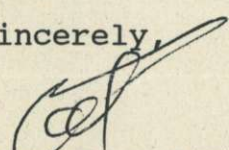


Dear Bill,

I've been reviewing the legislative proposal regarding S.345 Study of Redevelopment of Contaminated Properties.

Giovanna Peebles, Division of Historic Preservation, and I have long been interested in interpreting the Strafford Copper Mines and the part of Industrial Archeology and potential for a state park here in Vermont. Other States and the Federal Government through the National Park Service have done such projects at copper mines. I'm quite interested in how the study that is to be undertaken as per S.345 might impact upon the potential of this kind of a project in Vermont. In our opinion, this property has a great deal of potential, we would like something more than a very conservative and negative estimate of the potential of the development of this property for public use.

Sincerely,

  
Edward J. Koenemann, Director  
State Parks and Recreation

EK/lj

CC: Elizabeth McLean, Deputy Secretary, Agency of Natural Resources  
Conrad Motyka, Commissioner, Department of Parks & Recreation  
Giovanna Peebles, State Archeologist, Div. Historic Preservation



Copper Mining



Date sent: **Tue, 24 Mar 1998 08:47:18 -0600**  
Send reply to: **Bill.Mulligan@murraystate.edu**  
From: **Bill Mulligan <Bill.Mulligan@murraystate.edu>**  
To: **Multiple recipients of list <acra-l@lists.nonprofit.net>**  
Subject: **New Publication**

I would like to share with the list information about the reprinting of a hard-to-find novel on the Cornish immigrant experience in Michigan -- The Long Winter Ends by Newton G. Thomas. Those working on projects in mining areas will find it of interest.

A reprint of the 1941 novel by Newton G. Thomas, *The Long Winter Ends* (Wayne State University Press; introduction by William H. Mulligan, Jr.; \$16.95 paperback; pub. date: February 20, 1998) tells the story of a year in the life of a young emigrant miner who leaves Cornwall, a peninsula at the southwestern end of England, to work in the copper mines of Michigan's Upper Peninsula. Typical of emigrant miners drawn to the new mines in America after copper and tin mine closings in Cornwall, Jim Holman journeys to Michigan from Stoke, Cornwall, and spends his first year living in a boarding house with other Cornish miners.

Through Jim's story, *The Long Winter Ends* offers a glimpse into the lives of an often neglected immigrant group that played an important role in the development of the Great Lakes and American mining industries since the 1840s. Drawing on his own experience as a young Cornish immigrant in the mining communities of the Upper Peninsula, Thomas incorporated firsthand knowledge of the work routines of underground mining, as well as the inflections and patterns of Cornish speech, into this novel. With an introduction providing information about the cultural history of the Cornish, this narrative traces a Cornish emigrant's experience, including details about the failure of the mines in Cornwall, his hopes to preserve Cornish traditions in America, and then finally his acceptance of a future in America.

Newton G. Thomas was born in Stoke, Cornwall, in 1878 and emigrated to Michigan's Upper Peninsula as a child. He was on the faculty at Northwestern University Dental School, taught histology at the University of Illinois, and served as secretary of the College of Dentistry in Chicago.

William H. Mulligan, Jr., is a professor of history at Murray State University.

To purchase a copy of *The Long Winter Ends*, visit your local bookstore or call 1-800-WSU-READ.



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Personal web site:

<http://campus.murraystate.edu/academic/faculty/Bill.Mulligan/mull-pers.htm>

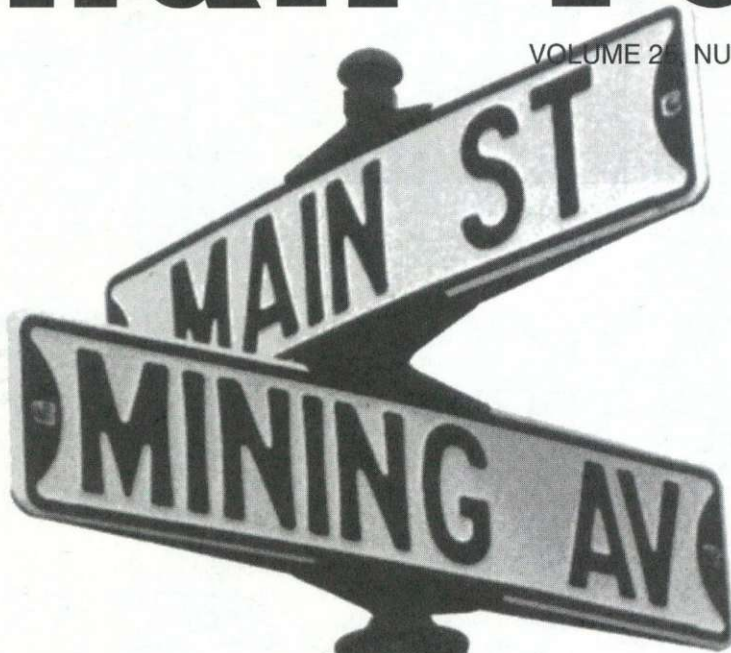
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Mining  
(Subject file)

# Small Town

VOLUME 2 NUMBER 1, JULY-AUGUST, 1994



# Small Town

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The Small Towns Institute is a nonprofit corporation dedicated to collecting and disseminating information on new and innovative ideas concerning the issues and problems facing small towns and nonurban areas. Each member of the Small Towns Institute receives six bimonthly issues of *Small Town* which bring together the interests of a broad spectrum of people and organizations concerned with community well-being. The newsjournal contains perspectives from individual citizens, planners, governmental officials, business groups, educators and others who share a common interest in enhancing the future of small communities.

The Small Towns Institute wishes to express its deep appreciation to Central Washington University for the continued and long-standing support that it has given to the Institute and its ideals. Offices of the Institute are located in the Local/Regional Studies Building of Central Washington University by special arrangement with the university.

*Small Town* welcomes receiving articles and news on every aspect of community life. Submissions should emphasize how projects, programs or research may be useful to other towns, citizens and organizations or should give other insightful information on various aspects of small town life, the development of community and the idea of sense of place. All contributions are welcome and each will be given careful consideration.

Articles should be approximately 6 to 16 double-spaced, typed pages. Submissions are also accepted on computer disk. Please specify the format. We ask that authors also submit graphics along with their manuscripts in order to illustrate points made in the articles. All submissions concerning programs that have met with community-wide success are welcome, however. Since *Small Town's* readers include a wide assortment of professionals and nonprofessionals in a variety of fields, we ask that authors avoid academic jargon and write in a style understandable outside of their specific disciplines.

Membership in the Small Towns Institute is open to anyone interested in small communities. All categories of membership receive the newsjournal *Small Town*. INDIVIDUAL MEMBERSHIP, \$35, is for local citizens and those with a professional interest in small towns. INSTITUTIONAL MEMBERSHIP, \$40, is for all libraries, schools, government agencies, businesses, nonprofit organizations, chambers of commerce and local governments. All memberships requiring signed vouchers or completion of other paperwork must be in the Institutional category. SUPPLEMENTARY MEMBERSHIPS, \$25 each, are available to any paid member desiring multiple copies of *Small Town*. These may be sent to separate addresses, but they must run concurrently with (and be billed on) the same invoice as the membership of the sponsor. CANADIAN and OVERSEAS are \$45, payable in United States funds. An AGENCY SUBSCRIPTION, \$45, is available for those who wish to order *Small Town* through a subscription agency. Since the Small Towns Institute is a nonprofit corporation, all memberships are tax-deductible. Back issues and the complete run of *Small Town* are also available. Single copy price, other than special issues, is \$7.

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# The World from Main Street

## *Former Occupations of Today's Middle Class*

A national chain of hardware superstores has begun airing an interesting set of advertisements on our local television stations. The chain features stores that are bigger than a football field and which carry large quantities of every imaginable hardware item, ranging from the traditional nuts, bolts and nails, to kitchen cabinets, house plants and graded lumber. The ads say that you will always find what you want at these hardware stores. And, after wandering through one, I believe them. A person could spend hours just getting a feel for the magnitude of the merchandise. The company must have an army of buyers who spend every waking moment trying to figure out one more item to stock. Their jobs must be difficult because I don't think they find many new ones.

The television ads, however, stress a different aspect of the stores' image: the employees' friendliness and special competence. Each one focuses on one employee and features a short, thumbnail biography. One ad says that so-and-so grew up in the door lock business so you can trust her expertise. Another tells of the two decades an employee spent in the lumber business and how well he knew every aspect of it before coming to work at the store. A third talks about the decades of gardening experience accrued by a cheerful and competent middle-aged man before the store picked up his services.

These are good ads. The advertising agency that created them has my admiration. They inspire trust, they show that the expertise is found in the store and they tell all of us that, even though the store is the size of an airplane hanger, the hearts of the people who work there are in the right place and the company isn't just a faceless corporation only concerned with stockholder profits. Instead, they make a strong case that the corporation and the employees have pride and are small town oriented and friendly, just like the folks who once ran the neighborhood stores that the megastore replaced.

And, therein lies the problem. What the ads imply but don't say is that all of those experts who now work for the chain once worked elsewhere and probably worked for themselves. They didn't get all of that expertise in locksmithing, the lumber business and in gardening from working for the megastore. Those stores represent a new development in retailing that is only a few years old. Instead, the expertise came from working in the old, small town businesses that folded with the advent of superstore shopping. Or, more importantly, the expertise came from owning their own businesses and acting as independent members of America's entrepreneurial middle class. Unemployment meant that they had to find another job—the present one in the superstore.

All of us shop for bargains. All of us want to find the best price for an item. We shop for bargains, not because we want to put our neighbors out of business, but, simply, because we have only so much income and we need to spend our treasure

wisely. Few people are immune from that impulse.

The new discount stores (either general merchandise or specializing in a certain type of product) understand the need to save money and they exploit it. The very economies of scale that they can bring to bear on their suppliers makes it certain that they can always outcompete the hometown, mom and pop stores.

Superstores do not play on a level playing field. Their overwhelming competitive advantages mean that the same scenario is repeated in communities throughout the country: The merchants who once sold their wares downtown have quit business or have redirected their inventory to fill the few odd niches that the superstores leave to the rest of the business community.

This further results in probably the most profound and least discussed impact of the superstores: their impact on the middle class. Much of the prosperity of this country has been based, at least since the turn of the century, on the middle-class merchants whose stores lined the downtown streets of our communities. They resided in solid homes in our neighborhoods, they contributed in uncounted ways to the charities and worthy causes of our towns, they employed our sons and daughters and they took pride in the growth and prosperity of our communities.

Those bonds are at least weakened when they are forced out of business. Perhaps they can keep their middle-class homes on their new salaries, but the other changes in their lifestyle are more profound. First, they have much less incentive to charitably contribute to our communities. The people who ask are no longer their valued customers. Second, they no longer have the pride of ownership. That translates into taking less care of the community. To give a metaphor for this attitude, ask who takes better care of a dwelling, an owner or a renter? The same goes for a community.

Third, they no longer can generate employment and good wages for their neighbors. People who have a common stake in the future of their communities often take care of their friends and neighbors. Who does your local hardware or drug store (assuming any are left) employ? They employ family and they employ friends.

When Wal-Mart founder Sam Walton died, an acquaintance read a newspaper article that said he was one of the two or three richest people in America. Unimpressed, my friend said, yes, he may have been rich, but we need to remember where the money came from. Walton's family had the money that once had been distributed among tens of thousands of families in the small towns of the land. The money that once fueled Main Street now rested as profit in the hands of one very successful entrepreneur. Did the money do the country more good in the hands of Mr. Walton or in the hands of the former Main Street merchants?—KDM

# Expanding the Tourist Season:

## An Ozark Success Story

by Susan L. Bradbury and Barbara Becker

Tourism has rapidly grown into a major social and economic force in both the world and in the nation. In the United States, tourism is the third largest retail industry in the country, employing 5.5 million people and generating more than \$36 billion a year in federal, state and local tax revenue.<sup>1</sup> As a result of this major economic clout, many small and rural communities throughout the nation are turning to tourism as a means of stimulating their economic growth and development.

The economic benefits that are associated with the tourism industry include increased employment and income, improved local infrastructure and recreational facilities (which local residents can utilize, as well as the tourists) and the generation of government revenue that can be used to improve community facilities.<sup>2</sup> Other positive sociocultural impacts that derive from tourism may include historic building and landscape preservation and the conservation of a town or region's cultural-rich heritage.

Yet, despite all of the benefits that the industry can provide a community, a tourism-based economy does contain certain drawbacks. For example, tourism is subject to considerable seasonality. This often produces negative economic and social impacts on the host regions because they have limited seasons. The off season in many tourist communities features high unemployment and a lagging economy.

Communities can do something to combat this problem, however. Local leaders from the Ozark region in Southwest Missouri have successfully combated this problem by

joining forces in order to develop a unique solution for enticing visitors to town during their off seasons.

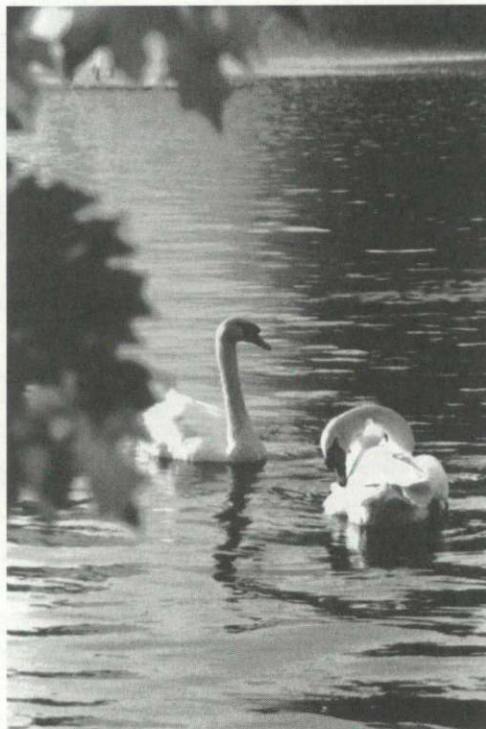
### *Tourism and the Ozarks*

Tourists have long recognized that the Ozark region is a prime recreation and resort area. Its main attractions—scenic beauty and summer recreational potential—have led to the development of Missouri's largest resort area. In 1991, an estimated seven million visitors were drawn to the region. The Ozark Mountains, numerous lakes and the peaceful, rural

countrysides have attracted outdoorsmen, hunters and fishermen from around the country for decades. Lake Taneycomo and Table Rock Lake are recognized as two of the finest bass fishing areas in the country.

Although fishing, hiking, caving and camping are still main attractions in the Ozarks, some diversification has taken place. For instance, within the last two decades the city of Branson, Missouri, has become nationally famous as a major focal point for the country and western music industry. Today, the number of music theaters and permanent shows in Branson which star major country and western singers and groups rivals the number found in Nashville, Tennessee, the traditional center of country music.

Families from all across the United States visit the community in order to find fun and entertainment. However, despite this nearby growth and success, major sectors of the regional economy have re-



*Swans create a picturesque scene as they swim lazily on a sunny day in the Ozarks. The swans represent only one of the summertime tourist attractions found in this section of Missouri. Photograph courtesy of the Ozark Marketing Council.*



Area lakes near Branson, Missouri, offer good fishing that attracts people from all over the Midwest. Local businesses and residents depend on these tourists for much of their yearly income, so they are very interested in extending the tourist season. Photograph courtesy of the Ozark Marketing Council.

remained dependent on the seasonal revenue generated during only the summer portion of the year.

### **The Problem and the Solution**

The traditional Ozark tourist season is, basically, a summer season that lasts only from May through October. Revenues normally drop dramatically at the end of October, as many

#### **Average Monthly Unemployment Rates for Stone and Taney Counties, 1987**

January	18.7%
February	18.6%
March	16.4%
April	9.0%
May	5.2%
June	4.8%
July	4.1%
August	4.3%
September	4.5%
October	4.7%
November	12.8%
December	17.2%

Source: U.S. Department of Labor, 1987.

establishments, including major fast food chains, attractions, shops, motels, music theaters and country and western shows close for the season. All of these closures have annually created a sharp regional rise in seasonal unemployment. To overcome this economic weakness, 40 area tourism and business leaders worked together and developed an effective scheme to expand the duration of the tourist season and bring more customers to the region.

In 1988, officials in a number of communities launched the Ozark Mountain Country's Festival of Lights—an attraction that featured winter or holiday lighting displays. The success of this effort is reflected in the increasing number of people who are attracted to the area during the prolonged light-

ing season of November and December.

The Festival of Lights is a cooperative effort among the Ozark region's communities. It is designed to create America's largest outdoor lighting attraction. The participating Missouri communities include Branson, Indian Point Village, Kimberling City, Lakeview, Nixa, Ozark, Reeds Spring and Springfield. In all of these localities, creative lighting displays are sponsored by community groups and businesses. Even individual residents get into the festive spirit. The core of the festival, however, involves public buildings and private businesses that are trimmed in lights in order to celebrate the holidays. Although designed as an economic development project, the festival has produced the added benefits of enhanced community identity, increased local pride and better regional cooperation.

Once the festival brings people to the region, they find that, in addition to the Festival of Lights, there are dozens of things to see and do during the off season in Ozark Mountain Country. The colorful lighting displays, along with special events, pageants, music shows and festive parades, promise to put every visitor into the holiday spirit. Unique shopping

*Susan L. Bradbury is an Assistant Professor in the Department of Urban and Regional Planning at Eastern Washington University in Cheney, Washington, 99004. Barbara Becker is an Associate Professor and Program Coordinator of the Community and Regional Planning Program at Southwest Missouri State University in Springfield, Missouri, 65804. For more information on the Festival of Lights, contact Jan Eiserman, Marketing Council of Ozark Mountain Country, P.O. Box 636, Branson, Missouri, 65616.*

opportunities and holiday entertainment also provide the families with memorable experiences.



*Carolers share the Christmas spirit with both residents and tourists during the area-wide Christmas celebration that now attracts people from many states to the Ozarks in December. Photograph courtesy of the Ozark Marketing Council.*

Officials borrowed the Festival of Lights idea from a Wheeling, West Virginia, event which had successfully converted the town's low-traffic winter months into a thriving tourism season. Although relatively new, Ozark Mountain Christmas has already become a success—even though it only started six years ago in 1988. In its first year of operation, an estimated 75,000 visitors were drawn to the area. An estimation of the immediate impact of these tourists can be derived from the fact that these people spent a great deal of money.

#### Annual Visitors to the Ozark Region

	May-October 1987	May-December 1989	April-December 1991
Day Only	931,529	876,546	1,148,438
Overnight	2,652,983	2,892,269	3,150,614
Total	3,584,512	3,768,815	4,299,052

Note that the season has been extended from May-October to April-December.

Source: The Marketing Council of Ozark Mountain Country, 1992.

Sales generated an additional \$481,726 in sales tax revenues.<sup>3</sup> In every succeeding year attendance has increased. In fact, the goal for 1995 is one million visitors.

Not only have revenues increased, but local employment has benefited, as well. Historically, the unemployment figures

for Stone and Taney counties during November and December had been extremely high. However, the unemployment rate in November fell from 12.8 percent in 1987 to 9.3 percent

#### Average November and December Unemployment Rates for Stone and Taney Counties

	1987	1989	1991
November	12.8%	11.5%	9.8%
December	17.2%	13.6%	11.1%

Source: U.S. Department of Labor, 1987, 1989 and 1991.

in 1991. The December figures fell from 13.6 percent in 1987 to 11.7 percent in 1991. Although it is true that some elements of seasonality have remained, the prolonged opening of area establishments has reduced the extremes in the employment level peaks and valleys.

Other benefits associated with the lighting festival include a 32 percent increase in occupied area hotel rooms between 1987 and 1990 during November and December. Sales and sales tax revenue for those months have also dramatically increased. Fourth quarter sales tax revenues for Stone and Taney counties have grown by 104 percent since 1987. Conservative estimates show that the direct monetary earnings of the 1990 Ozark Mountain Christmas Festival of Lights

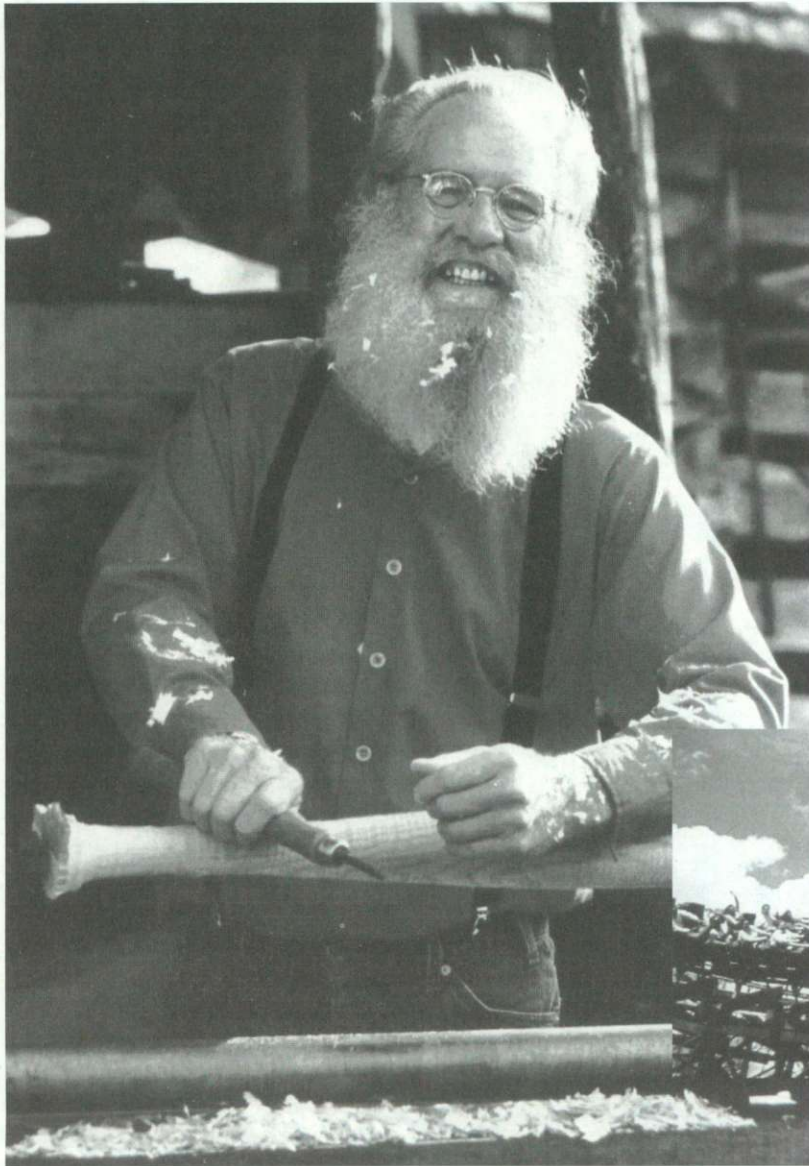
#### Sales Tax Collections for Stone and Taney Counties (Fourth Quarter)

1987	\$1,825,238
1988*	\$2,306,964
1989	\$2,622,252
1990	\$3,042,055
1991	\$3,731,088

\*Note: 1988 was the first year of the Festival of Lights.

Source: The Marketing Council of Ozark Mountain Country, 1992.





Visitors at the Silver Dollar City attraction in Branson, Missouri, can watch a woodcarver intricately practicing his skills or, for those of stronger heart, take a thrilling 50-m.p.h. wooden roller coaster ride on the "Thunderation." In the past few years, Branson has developed a national reputation for its music and entertainment attractions. Many country and western singers have recently made Branson their home and performing base. The town now rivals Nashville, Tennessee, as a country music center. Photograph courtesy of the Ozark Marketing Council.



totaled \$15 million. With an economic base multiplier of 2.5, officials estimate that the overall economic impact to the region to be approximately \$38 million.<sup>4</sup>

The project's success demonstrates that even during hard economic times, summer resort areas do have the ability to attract visitors during their off seasons. However, in order to make it work, the effort takes creativity and a strong community spirit. Christmastime traditionally means travel to go to see relatives and increased consumer spending to buy presents. By taking advantage of these facts and by extending their traditional tourism seasons, these Ozark communities have succeeded in significantly boosting the regional economy.

As this case study demonstrates, communities need not shy away from tourism as a form of economic development because of its seasonality. Tourism is becoming a more stable part of a diversified economy as communities develop ways to make it a year-round industry.<sup>5</sup> Although pleasure travel

depends on discretionary income and is price elastic, in recent years, people have also developed a greater tendency to travel. Many households now actually regard pleasure travel as an annual necessity. As a result, ample opportunities now exist for resort areas that desire to extend their tourist seasons in order to reach more people and successfully develop their economies.

<sup>1</sup>U.S. Travel and Tourism Administration, *The 1988-89 Economic Review of Travel in America*, Washington, D.C.: U.S. Travel Data Center.

<sup>2</sup>Edward Inskeep, "Tourism Planning: An Emerging Specialization," *Journal of the American Planning Association*, Vol. 54, No. 3, 1988, pp. 360-372.

<sup>3</sup>Marketing Council of Ozark Mountain Country, Annual Report, 1991, 1992.

<sup>4</sup>Marketing Council of Ozark Mountain Country, 1991, 1992.

<sup>5</sup>Inskeep, 1988, pp. 360-372.

# Learning from America's Preserved Historic Mining Landscapes:

## Some New Perspectives on Community Historic Preservation

by Richard Francaviglia

The traveler on Colorado's "Scenic Highway of Legends," Highway 12 west of Trinidad, is awed by the rise of the Sangre de Cristo range's spectacular peaks opposite the deep valley of the South Fork of the Purgatoire River. Suddenly, as if by surprise, the highway plunges into Reilly Canyon, a small valley branded by the ruins of the mining industry.

Here, amid the natural beauty of the Rockies, stands what is left of Cokedale. The town boomed in the early 20th century as the thriving mining community produced coke to fuel the furnaces of the Colorado Coke and Iron Company's steel mills. Today, what remains of this enterprise is a National Register historic district.

Behind an historic marker, a huge sinuous black gob pile marches down to the valley floor to join the remains of the town's buildings. Below, a magnificent row of abandoned coke ovens bear graceful stone arches reminiscent of ancient Rome. Cokedale possesses its own transcendent beauty. Its artifacts complement the area's natural grandeur and add a haunting dimension to the scenery.

One needs not wonder why "hard places" like Cokedale sprang up in such remote locations across the United States. That is part of a long story in America's industrial development.<sup>1</sup> Rather, we should ask why—and how—former mining towns like Cokedale wind up being preserved after their original reasons for being disappear.

From Hopewell Furnace, Pennsylvania, to Bodie, California, the American landscape is dotted with places whose heydays passed in the early 20th century—former mining towns

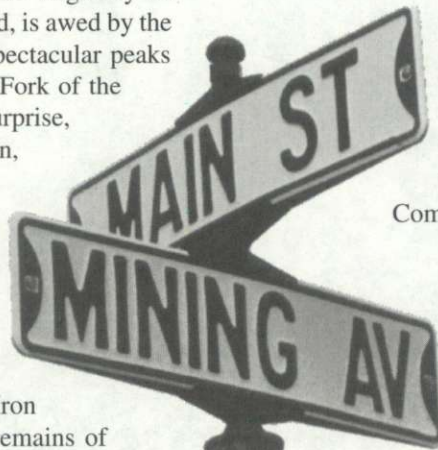
that have not quite faded away, but instead remain preserved (in varying states of ruin) as sites on an ever-growing itinerary of historic tourist locations.

"Visit Historic Cokedale," and "Take a Step Back into the Past," urges an attractive brochure prepared by the Cokedale Tourism Committee and the Colorado Center for Community Development. But, how much of the past do we really experience when visiting places like Cokedale? Is the past really preserved? How does Cokedale 1994 compare with Cokedale 1910? What elements of the landscape remain? What elements are we encouraged to see? What has *not* been preserved?

Geographers are concerned with three major aspects of postindustrial locations. The first concern is authenticity, or how accurately preserved mining landscapes compare to historic imagery and historic descriptions. The second concern is selectivity: Why do only portions of the original landscape remain? Can lost features be added or recreated? The third concern, utility, determines the purposes these mining landscapes serve and how cultural/historical geographers or others concerned with the content of historic landscapes can utilize them.

To address these concerns, we compare the touristic and preservation experience of the present with the past environment. By doing so, we see that places like Cokedale have multiple identities: historic, archaeological, pedagogical and aesthetic.

We know that the





Many of the mining communities that prospered during the late 19th and early 20th centuries often possess a rich legacy of historic architecture, as demonstrated in this 1983 view of downtown Houghton in the "Copper Country" of Michigan's Keweenaw Peninsula. Photograph by Richard Francaviglia.

Cokedale we view today is not—and can never be—the same boom community it was 84 years ago. Thus, we must interpret the site as a postindustrial artifact. Seen this way, places used by today's culture to explain the past serve many purposes, including educational, political and aesthetic roles.

Historical geographers have to reckon with our culture's need to preserve landscapes that become more interesting and attractive after they have failed. Two geographers recently noted:

Mining towns seem to be unusual, perhaps unique, among American settlements in being problems when they are booming but desirable when they have failed.... Americans have... remade into romantic sagas the histories of their early mining towns.<sup>2</sup>

Mining landscape preservation is a relatively recent phenomenon. Although a few visionaries began documenting and saving the physical heritage of mining towns as early as the turn of the century, and more joined the cause later in the

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1920s and the 1930s, it was the period following World War II that witnessed growing interest in our romanticized mining heritage.

Before mining towns could be preserved or restored, however, Americans developed a romanticized vision of their place in history and nature. Merging prose, poetry and art, Americans depicted the rich landscapes left in the wake of mining. Among the most effective were Muriel Wolle's popular drawings and books. These works on Colorado ghost towns defined the image for a generation of Americans.

Colorado, one contemporary 1880s observer described, "...conjures up forsaken mining camps, ragged ravines and barren mountains, rocks, plains and precipices that go to make up a very uninviting view...."<sup>3</sup> The state was among the earliest significant centers of mining landscape preservation efforts. This may partly explain why "mining towns" and "western" are so closely linked in the public mind, despite the fact that mining towns can be found in the East and upper Midwest.

Few writers have captured the sentiment of time and place better than the dean of popular historians, Lucius Beebe, and his associate, Charles Clegg, who wrote this ode to the western mining landscape:

The false fronts of once populous mining camps are good for a decade or so of Colorado winters at the most.

The tailings and mine dumps are only a little more lasting and a few centuries will have eroded them past discerning to the most perceptive archaeologists. The elemental earth is quick to reclaim the cuts and fills of vanished railroads. Thus, while for a brief period the tangible souvenirs are at every hand, their impermanence is there also, implicit in the very nature of the society and its economics that mined the hillsides for precious metals. A rags-to-riches social emergence was not notably aware of its mortality. It didn't build for the ages.<sup>4</sup>

These descriptions helped create a sense of urgency while



Students of the American West have noted that mining towns often refuse to die after their main reason for existence—mining—comes to a close. The small community of Rochford, in the Black Hills of South Dakota, is one of many such communities. Photograph by Richard Francaviglia.

generating an appreciation for the venerability of our mining landscapes. Beebe and Clegg were among the first to recognize the greatness of our mining heritage—even though this heritage was both ephemeral and pretentious. Landscapes of theatrical proportions displayed a montage of quickly-built ornate sets emulating the high cultures of Europe and the East. Yet, time's relentless march, together with the elements, underscored the vulnerability of this historic fabric while providing an almost perversely beautiful sense of desolation and decline. If every culture needs ruins to emphasize its past accomplishments and its relationship to nature, then our once prosperous mining towns are among the most powerful cultural symbols.

In my book, *Hard Places*, I show that two very different motives lie at the roots of our fascination with history. These roots affect how we perceive and preserve our mining towns. On one hand, we need to recognize their former greatness, to show how, with limited technology, the miners dominated nature to win mineral riches. On the other, we need to venerate their

antiquity by showing how this greatness fell to the hands of nature and time. Small wonder, then, that two types of mining town landscapes are preserved for tourists today: boomtowns and ghost towns.

### *Ghost Town Preservation*

Few places capture the imagination better than ghost towns. But, historians debate the technical definition of a ghost town. Some insist that the place should be completely depopulated, although it must contain standing buildings or ruins. Others say that a few living hangers-on (perhaps ten or fewer) may be permissible, as long as the town once had

a much larger population. Others say that a true ghost town is a place where all above-ground signs of habitation, including buildings, have vanished.

These distinctions are, of course, academic. The public views a ghost town as a tangible but depopulated place inhabited only by the memories of former occupants. Ghost towns imply former activity, perhaps even former greatness, as manifested in now decrepit buildings reclaimed by nature. We take an almost perverse interest in the aesthetics and symbolism of time marching into, and over, such forlorn places.

Ghost towns are instructional, for they depict risk-taking, a revered trait in our culture. In creating the popular Knott's Berry Farm in Orange County, California, in 1953, Walter Knott recognized the iconography. He was among the pioneers of a politically conservative school of educators creating mythical places to reaffirm the values of American greatness. Ghost Town was built anew in Los Angeles basin's fertile farmlands, but it depicted a wild and woolly, rough-hewn mining town main street wherein visitors could even pan for flecks of real gold. We are told that:

Ghost Town depicts an era in our nation's history when men were forging ahead and crossing new frontiers. Ghost Town also represents an era of free people who carved out their individual empires from a new land, asking only to work out their own salvation without let or hindrance. The people, the things, the buildings of Ghost Town are long dead, but the same pioneer spirit still lives on.<sup>5</sup>

Although Ghost Town was a fictional town, it stood as a model for real places, such as the silver mining town of Calico, in California's Mojave Desert. It was Walter Knott, "a direct descendant of early day pioneers," who recognized the deeply-held American fascination with the past and capitalized on it.

Calico, "site of one of the most spectacular silver strikes ever made in California," was one of the earliest resurrected ghost towns. In 1953, the public was told, "today the town-site, with its handful of ruins, is gradually being restored by the Knott family."<sup>6</sup>

Calico emerged as one of the more popular booming ghost towns, an attraction not too far from the otherwise uneventful highway between Los Angeles and Las Vegas. Sequestered in the colorful, forlorn Mojave desert hills that gave it its name, Calico became the liveliest of our mining ghost towns and one of the region's most successful tourism ventures.

Most ghost towns are not as vibrant as Calico. Many, like Ballarat in eastern California's Panamint Valley, are little more than historic markers standing near the melting adobe and splintered wooden walls of former buildings. The grandest of our mining ghosts is the silver mining

town of Bodie, California. It symbolizes our culture's desire to stop time. Set in a sagebrush-covered, bowl-shaped valley in the high desert, it was one of the roughest and most isolated boom towns.

Like most of its sister mining towns, Bodie had experienced devastating fires; one of which, in 1932, burned down half of the business district and further contributed to the town's forlorn quality. A watchman looked after the remains of the town throughout the 1940s and 1950s, deterring souvenir hunters and scavengers. Private ownership by the wealthy Cain family guarded against Bodie's nearly sure fate of obliteration by scavengers.

In contrast to Columbia, the gold rush town in California's mother lode—another state park that attempts to capture the vibrant spirit of an active mining town—Bodie is dead, and

proud of it. Since its opening as a state park in 1962, visitors to Bodie find themselves face to face with solitude. The town appears to be desolate and unoccupied. In reality, everything is carefully preserved in a state of arrested decay. Buildings lean at precarious angles, seemingly ready to topple with the

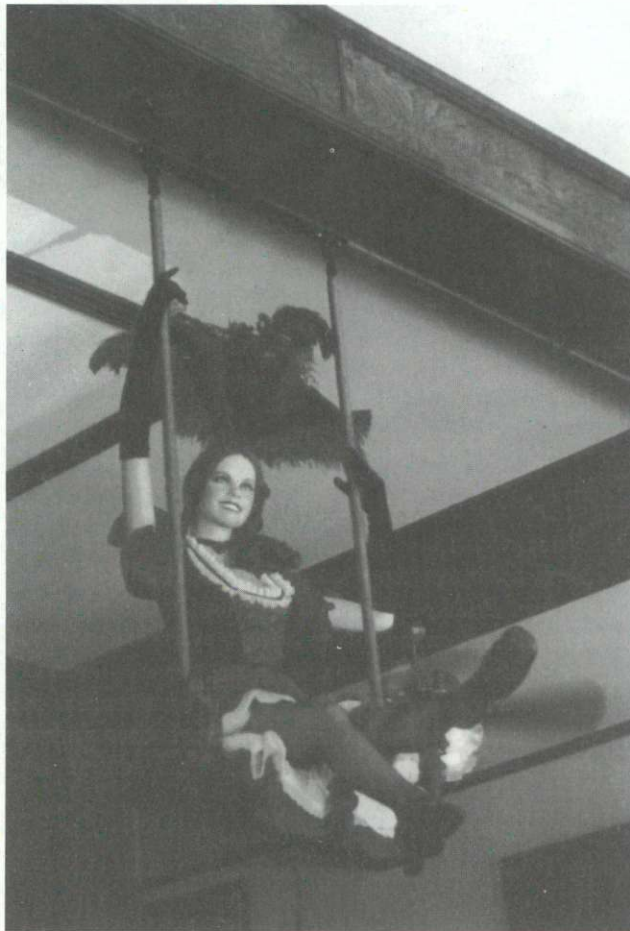
next windstorm. They will not, however, for they are carefully propped up by hidden supports.

In Bodie, the preservation of the ghost town image finds man ironically resisting the elements and forestalling the inevitable. Such efforts may miss their mark. Recognizing the extreme fire danger in Bodie, state park preservationists painted the buildings with a clear coating of fire retardant. To their chagrin, this treatment actually accelerated the deterioration of the wood that they were trying to protect!

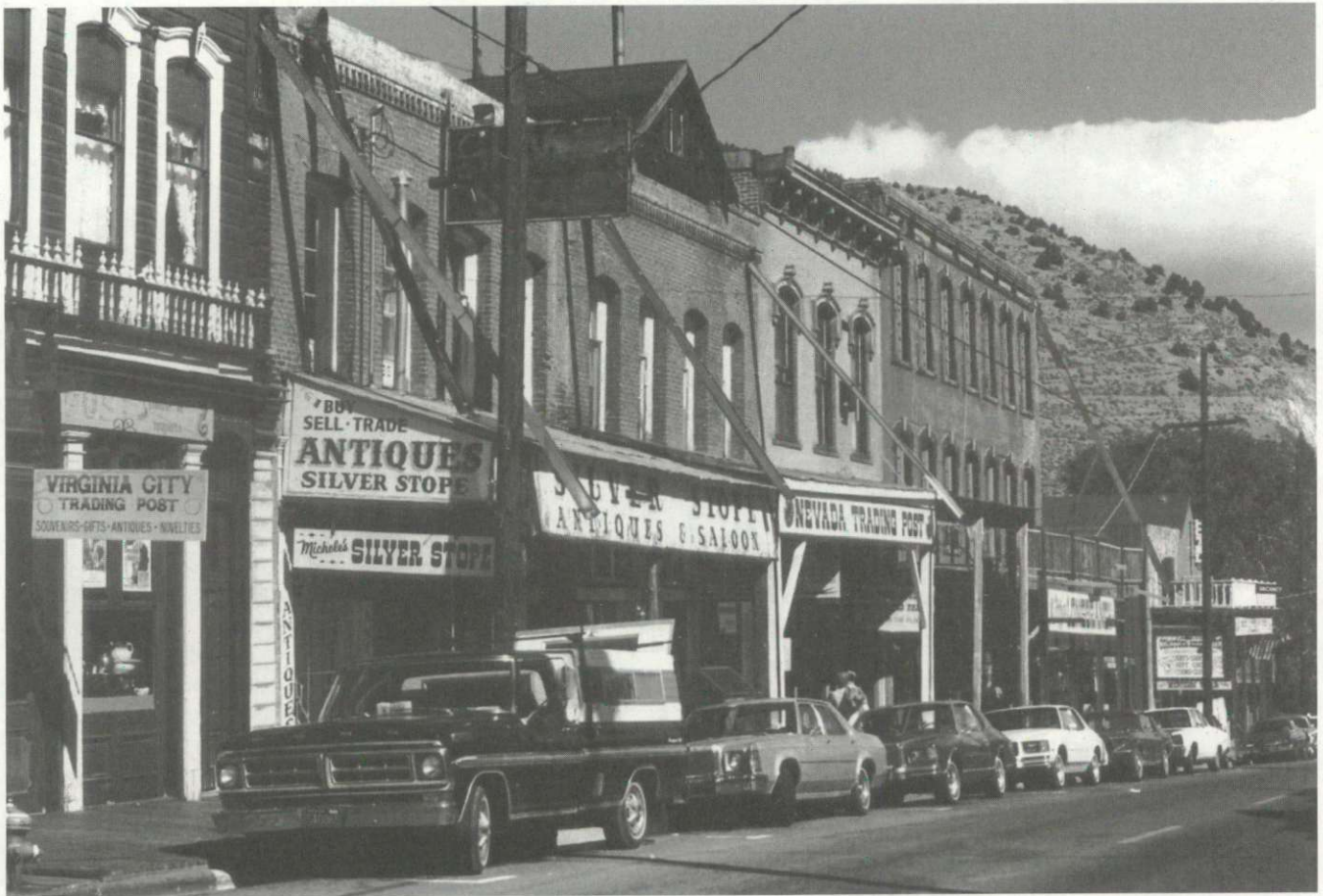
Nevertheless, the overall effect of the behind-the-scenes stabilization of ruin is stunning. Bodie has an artistic patina. The Standard Mill stands at the edge of town, its corrugated zinc metal sheathing burnished to a dull whitish-blue. Dark basaltic rock foundations stand forlorn and geometrical. A hundred seasons have given the ramshackle wooden buildings a silvery-golden hue. The gray-green sagebrush flourishes along with fat cattle grazing at the site. Left unattended, the

elements and scavengers would reduce the place to an archaeological site in a matter of months. Bodie is preservation as theater, and its landscape is so provocative that the drama needs no "living history" actors, only a stage of deserted buildings to tell its story.

This preservation drama has been heightened recently with the National Historic Register's proposed nomination of the town and its mining-related landscape as an historic landmark—an action which the active Bodie Consolidated Mining Company opposes. In pursuing the nomination, mining preservationists recognized that the original boundaries did not include topographic features, such as ore dumps and tailings, which frame the historic townsite. Therefore, they believe Bodie's historic district should be expanded. Renewed mining activity adjacent to Bodie would no doubt damage the



*Mining towns such as Virginia City, Nevada, now present their mining history in educational, as well as recreational ways. In the above photograph, a mannequin bar girl swings from the ceiling of a vintage saloon in order to convey something of the "wild west" days to tourists. Photograph by Richard Francaviglia.*



*The attractive main street of Virginia City, Nevada, has prospered since the 1950s because many of the businesses there cater to the thousands of tourists who have annually flocked to the town in search of mining history. The money that they provide has given building owners the ability to fix up their buildings and keep them attractive. Photograph by Richard Francaviglia.*

feeling or ambiance of this historic mining town. This point, however, is of little concern to the present mining industry.

### ***Preservation of Boom Towns***

Not all mining town sites are ghost towns. Often, people remain behind to pursue new careers or retire in the places where mines have played out. Former mining community landscapes often convey a sense of the past that attracts visitors—a point not lost on merchants who see their own potential gold mine in marketing the history.

Tombstone, Arizona, was one of the earliest towns to capitalize on its mining-related boom town heritage. A state park established at the historic Cochise County Courthouse (complete with its gallows) further encouraged visitation. The traveler senses the spirit of the place when driving past Boot Hill on the way into town, arriving at a main street lined with false front buildings emblazoned with gaudy “wild west” signs and fake porches.

The town’s spirit is best revealed by a bumper sticker merchants promoted in the late 1970s, “Tombstone: The Town Too Tough To Die.” Actually, toughness has less to do with

Tombstone’s survival than popular culture fads. Beginning in the 1950s, television westerns, including “Tombstone Territory,” saved the town from oblivion. However, the emphasis of the rough and tumble downtown along Allen Street did little to preserve Tombstone’s mining history.

By the 1960s, Tombstone had become a tourist town capitalizing on its bawdy, violent history as a frontier mining and cattle town. By the late 1970s, however, the preservation movement had matured to the point that two consultants were able to advise merchants to remove the fake wild west trim and recover the rich historical fabric. But the merchants resisted, saying, in effect, “why question success?” As the sophistication of tourists increases, they may be forced to reconsider this decision.

Hoping to capture some of Tombstone’s tourist trade, nearby Bisbee launched into an aggressive marketing campaign in the early 1980s. By promoting its copper mining history, the “Queen of the Copper Camps” hoped to reverse the decline that followed the 1975 closing of its large open-pit copper mine. Not to be outdone by Tombstone, wags in Bisbee designed a sequel bumper sticker that, too, said something about the town’s tenacity: Bisbee: The Town Too Dumb to Die.

Bisbee holds a rich historical legacy. Much of the downtown commercial core consists of buildings constructed prior to 1925. It is this downtown, as well as the mine tour, that draws thousands of visitors hungry for history. Bisbee has many touristic counterparts. Among them are the fabled Virginia City, Nevada, Virginia City, Montana, Park City, Utah, and Black Hawk and Central City in Colorado.

These types of revitalized mining towns are subject to intense development pressure as a result of tourism. Gambling is probably the most demanding of these, for it precipitates rapid commercial development, as in Central City, Colorado. Communities with preservation expertise (Deadwood, South Dakota) or with preservation ordinances (Jacksonville, Oregon) can mitigate the impact.

Some mining towns, such as Aspen, Colorado, have been inundated by skiing tourism, losing much of their industrial character. Others, like Park City, Utah, are trying to regain their historic character through participation in the Certified Local Governments (CLG) program jointly sponsored by the National Park Service (NPS) and the State Historic Preservation Officers (SHPOs).

### *Preserving Company Town Landscapes*

A third type of mining community—the company town—is increasingly experiencing preservation restoration. Most of these company towns are coal mining based and are found in Appalachia or Pennsylvania's anthracite country.

Eckley, Pennsylvania, features a museum depicting the mining community's various historic phases. But the major attraction is the town itself, which consists of several dozen historic buildings, some moved to the site in the 1960s. Eckley's centerpiece is the breaker, a huge tippel/minehead structure built for the 1970s film, *The Molly McGuires*.

Eckley provides tourists with an interesting blend of industrial and cinematic history. It is interesting to note that the public sector accomplished this preservation of corporate history. Their future looks bright. Preservation planners speak of the "Coal Road," a West Virginia-based tour of restored and preserved company towns that will be part of a tourism itinerary to stimulate regional revitalization.

### *Historic Preservation and the Landscape*

Due to the historic preservation movement, old housing and commercial buildings in mining towns are more likely to be restored or rehabilitated. Preservation, much of it done in accordance with the Secretary of the Interior's guidelines for rehabilitation, has given mining communities a distinctive, upscale preserved look. This look confirms that preservation has become big business—and very popular.

In fact, a Gallup Poll conducted for the Urban Land Institute in 1986 revealed that a majority of people support the objectives of historic preservation. "Retaining a sense of the past," was rated as the most important objective of historic preservation.<sup>7</sup>

Historic preservation has two faces: the popular (or recreational/aesthetic) and the professional (or interpretive/educational). To the average person, historic preservation means saving and restoring historic buildings—usually historic homes and commercial buildings. To professionals, it is a process by which all historic properties (historic here includes both prehistoric archaeological and historic-architectural resources) are identified, evaluated and protected. These may also include industrial structures and other features.

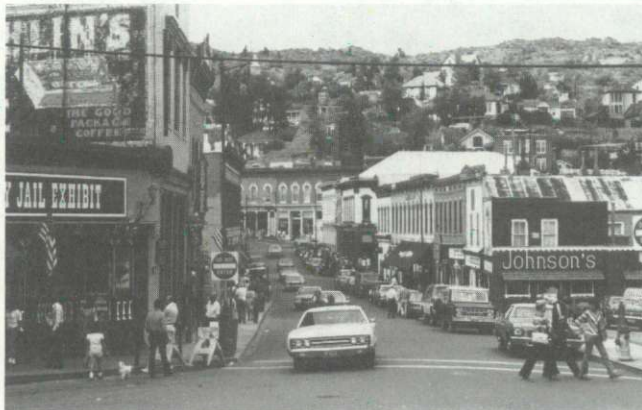
Professional preservation involves rather mundane recording of sites and structures that would or will normally be lost to progress or the elements. The professional



*Ghost towns may virtually vanish, only to be reconstructed after a fashion as preservationists move buildings back to the site. In the company coal mining town of Thurber, Texas, preservationists have moved St. Barbara's Catholic Church (foreground) and a miner's home back to the site. Prior to this relocation, the site was only marked by a few remaining features such as the smokestack (right center) and an abandoned company store (left center). Photograph by Richard Francaviglia.*

preservationist's most effective role is determining the historic significance of resources and providing this information to the public or private sector who may or may not actively advocate actual preservation.

If, for example, mining company officials have been informed by preservationists that a particular mine tipple is the



*Historic mining towns draw tourists, as seen in this view of Central City, Colorado, taken 15 years ago. Since the photograph was taken in 1978, legalized casino gambling has further transformed Central City's tourist landscape. Photograph by Richard Francaviglia.*

last of its kind in the region, the owners are ideally expected to take that information into account when making decisions. The tipple might be saved on site, relocated or, at the least, recorded using professional preservation techniques such as those used by the Historic American Engineering Record (HAER) or the Historic American Buildings Survey (HABS).

Preservationists must also provide this information to public officials considering demolishing certain city-owned properties, such as an early miner's hall that later served as a community hall, or a mining company office building that later served as city offices. When federal funds are involved in the project, administrators are required to participate in a review to determine the proposed project's impact on historic properties. If the impact is negative, they must find ways to mitigate the adverse effects.

Preservationists face tough decisions in dealing with abandoned mining lands. What remains is often both historically interesting and extremely dangerous. Hazardous mine openings are understandably sealed up (sometimes with screens or grates). However, many other features, such as tipples and headframes, are often demolished because they pose tax liabilities. Different opinions exist as to what constitutes an unsound structure, but building inspectors not supportive of preservation almost always find them unsafe—especially when their superiors want the building or historic feature demolished.

### ***The Preservation Process***

Preservation works at three levels: local, state and national. Preserving mining landscapes reveals just how complicated

the interrelationship between these levels can be. Experience shows that the importance of a particular feature ironically increases with each step up toward the federal level, probably because those who administer the federal program (the National Park Service of the U.S. Department of the Interior) review material from across the country and have a wider base of knowledge regarding what is historic. Sometimes it is the local residents who are the most ignorant about a particular mining-related feature's importance. This is especially true for those whose interest in development or fear of large government leads them to reject information that puts a particular feature in a broader context. Yet, properly informed and understanding locals are often the strongest and most knowledgeable preservation advocates.

Intermediate in the preservation process are the State Historic Preservation Offices, created by the 1966 Historic Preservation Act. The officer, as appointed by the governor, is responsible for implementing the preservation program adopted by congress. It is he or she who determines National Register eligibility for historic resources.

Preserving mining-related landscapes challenges the SHPO, however, because the state agencies responsible for stabilizing and reclaiming abandoned mine lands may not work closely with the officer. The task of educating all agencies involved with historic mining resources is formidable. Few public agencies want to be perceived as standing in the way of powerful mining interests that create jobs and fuel the local or regional economy.

While not all states have addressed this issue, South Dakota's State Historical Preservation Agency has taken steps to reduce the problem by hosting a workshop on historic mining resources. This 1987 meeting brought mining preservationists together from agencies across the country. In the last five years, numerous states, including Montana, have taken a stronger interest in preserving their mining-related heritages.

Both the strongest and weakest mining landscape preservation advocacy occurs at the federal level. The agencies' track records depend largely on the demography of their constituents. Agencies with little appreciation of mining heritage often represent either mining or environmental interests. Preservationists claim that the Office of Surface Mining (OSM) and the Environmental Protection Agency (EPA) have their own agendas and little or no awareness of historic resources and their preservation. One of the most sensitive issues in the 1990s, hazardous site clean up (some of them "superfund" sites), involves areas such as Butte and Anaconda, Montana, which contain important historic resources.

As of this writing, the National Park Service has maintained the strongest interest in identifying and preserving significant historic mining-related resources. The NPS, recognizing that a comprehensive effort is needed to protect the historic resources of an aggressive industry that operates nationwide, hosted a conference in Death Valley in January, 1989. The conference was aimed at increasing public-private



sector understanding of the challenges involved in preserving mining-related features and landscapes. Summarized in an eight-part report by NPS mining historian Robert Spude,<sup>8</sup> the conference dealt with identifying, interpreting and preserving mining features in the context of existing programs. The conference led to several resolutions, namely:

- Mining sites themselves, not just the legends and architecture of the mining frontier, must be looked at.
- Federal agencies must continue responsible management, and those which do not must be made accountable.
- Mining companies can continue their work while responding to public concerns and federal requirements.
- A national mining initiative, including congressional directives, is needed to identify and protect mining-related resources.

### *The National Register and Mining Districts*

Preservationists use the National Register of Historic Places as a yardstick to evaluate historic properties. The Keeper of

the National Register in Washington, D.C., under NPS administration, maintains this historic listing. According to the NPS, "historic districts, sites, buildings, structures and objects that possess integrity of location, design, setting, materials, workmanship, feeling and association" may be listed on the register when they possess significant quality in American history, architecture, engineering and culture.

Listing on the register identifies a property's significance at either the local, state or national level. After more than 25 years, the register lists more than 50,000 historic properties. The list of several hundred mining-related resources reveals two major types: either very notable individual buildings or assemblages of historic resources. Almost all of them were more than 50 years old when listed.

Preservationists judge an historic property using one or more of the following questions:

- Is it associated with events that have made a significant contribution to the broad patterns of our history?
- Is it associated with the lives of persons significant in our past?
- Does it embody the distinctive characteristics of a type, period or method of construction? Does it represent the



*Ghost towns have a special appeal to tourists. The remote and abandoned community of Bodie, California, has been a state park since 1962. Although visitors get the impression that they are experiencing a forlorn, disintegrating town, Bodie is carefully maintained in this state of "arrested deterioration" by the efforts of the park staff. Photograph by Richard Francaviglia.*

work of a master, or possess high artistic values? Does it represent a significant and distinguishable entity whose components may lack individual distinction?

- Has it yielded, or will it likely yield, information important to history or prehistory?

Using these criteria, one sees that mining communities possess a wide range of historic features associated with numerous themes, such as ethnic history, industrial history and transportation history. However, given their cosmopolitan quality and their feverish productivity, most mining districts contain a wealth of features, making it difficult to select a boundary point where preservation begins or ends. To exacerbate the problem, new developments may have intruded on the site, causing one to question whether or not the mining district is still historic.

Public participation may also deter a site's chance at historic distinction. Local residents may or may not recognize the significance of their community's mining heritage. Property owners may care little for history, especially if it threatens their development options. A mining company might fear its property's listing on the National Register will hamstring its ability to further develop future mining operations. These fears, however, are unfounded: The National Register listing imposes no constraints on what an owner can do with private property. If changes prove detrimental to the historic property, it will simply be deleted from the list.

Change and attrition poses problems for preservationists interested in historic mining districts. For example, abandoned mining-related topographic features which, over time, have further eroded or revegetated present a dilemma regarding their historic integrity. Placing an historic mining-related property or feature on the National Register involves an assessment of its present condition compared with its historic condition. Historic features, including tailings piles and ore dumps, can be compared with historical photographs. A value judgment is required to determine how much change is acceptable before a feature loses its visual associative character or feeling.

### *Historic Districts*

Although individual buildings and features are listed on the National Register, there is a growing tendency to think in terms of historic districts. An historic district is defined as a:

...geographically definable area—urban or rural, large or small—possessing a significant concentration, linkage or continuity of sites, buildings, structures and/or objects united by past events or aesthetically by plan or physical development.<sup>9</sup>

An historic district is largely a visual phenomenon. We know when we are in one because the place has a "feel" based

on the presence of a significant number of historic buildings. There are few, or relatively few, modern intrusions.

The historic district in Jacksonville, Oregon, conveys this feeling of significance. The town prospered during the gold mining booms of the mid-19th century. A preservationist tells us that "...following a series of devastating fires, ordinances were passed that mandated the use of brick along the main street."<sup>10</sup> This contributes to the commercial district's sense of permanence.

Following the closing of the mines, "fruit raising and a minimum of local commerce kept the settlement from becoming a ghost town, while poverty kept it from changing." This condition enabled the town's historic architecture to survive into the middle 1960s, when "...more than a hundred 19th-century buildings in the town were placed on the National Register of Historic Places."<sup>11</sup> These buildings epitomize the term historic district—an identifiable place that dates from a particular historic period.

The commercial core or downtown area of Bisbee, Arizona, similarly displays a kind of historic architectural integrity. There are over 200 historic buildings packed into a rugged canyon setting. With relatively little new construction and no vacant lots resulting from demolition, nothing spoils the impression that one has stepped back in time.

Preservationists placed the Bisbee historic district on the National Register in 1979. As is often the case, this first nomination identified the best of the historic resources. Today, historic preservationists are anxious to expand the Bisbee historic district to include other historic resources, including homes, overlooked in the earlier effort.

### *Multiple Resource Areas*

Historic districts, so aesthetically pleasing, are the gems of the preservation world. Many could, with a few adjustments, serve as period movie sets or filming locations. More often, however, we visit historic mining districts where time has not stopped. Historic buildings, structures and even districts may stand next to modern features that would seem to compromise the location and historic character. Important features may have been removed to such an extent that the community or location does not possess the feel of an historic district. This does not mean, however, that the place is any less interesting.

Even though its visible historic resources are scattered, the site may still have an important historic story to tell. A multiple resource area, then, displays a discontinuous distribution of important historic resources. Each resource plays a part in revealing the history of the area. Looking carefully at such areas, one sees that they are actually as interesting as historic districts because they permit us to see the impact that more recent developments—what some call progress—have had on the mining community.

That is just the feeling conveyed by the Tintic Mining District Multiple Resource Area in Utah. Here one sees an historic montage: In Eureka's once-prosperous central business



*Mining leaves a powerful signature on the land and mining communities would do well to remember that the topographic, structural and engineering features associated with mining are as important to the town's history as the fine commercial buildings that exist on the main street. Black Hawk, Colorado, seen in 1978 before the town boomed with the establishment of casinos, provides an example of the legacy that mining leaves in the landscape. Photograph by Richard Francaviglia.*

district the remnants of old Victorian bonanza buildings stand side-by-side with modern commercial buildings. There are gaping holes where historic buildings recently stood. Nevertheless, the district is a veritable museum of scattered engineering features, such as headframes, stamp mill sites and ore bins.

The Tintic Mining District's National Register nomination form states that the "primary significance of the historic resources...is their value in the documentation of metal mining history, both on the state and national level."<sup>12</sup> A wide range of historic resources associated with numerous uses, from commercial to residential to engineering, abound in this area. Some historic resources are readily visible despite the intrusions. Others are archaeological in the sense that they are below ground level.

The area is, in fact, rich in sites of historic archaeological significance. These sites, too, can tell us much about the location—provided that we have the ability to read them using methods that supplant those we rely on to interpret the visible landscape.

### *Vanishing Landscapes: The Historical Archaeology of Mining Districts*

Not all historic mining landscapes look as though the clock stopped just after they were abandoned. Some have essentially vanished from view. Although we are most likely to know about the gems, such as Virginia City or Central City, that have many extant buildings and structures, there is another, more subtle, landscape associated with mining: the historic site where virtually nothing remains above ground.

Aurora, Nevada, fits this description. Whereas, just 30 years ago, one could see the shells of abandoned buildings, the 1990s reveal only a sagebrush-covered site. Does this make the location any less historic? The answer, of course, is no—provided that we know how to read other, more subtle or hidden clues, such as eroding tailings piles, ore

dumps, building foundations and other below-ground works of man that nature is slowly reclaiming.

One of the most important and overlooked aspects of the National Register in evaluating historic resources is the potential of the property to yield information about the history or prehistory of a site. This brings us to the realm of historical archaeology, which is concerned with what the physical remains of fairly recent literate societies—such as the sites of mining towns—can tell us about the people who lived there. The physical record can be supplemented by the written records that were sometimes left by these people.



*Mining communities such as Chinese Camp, California, often make good use of older buildings. This historic store, dating from about 1860, serves as a visitors' information center and makes a tangible connection with the past. Photograph by Richard Francaviglia.*

In the case of the mining areas, the physical record can also tell us much about the processes that the miners either did not understand well enough to document or chose not to write down at the time. Historical archaeologists are often concerned with the housing and commercial trade of mining areas. Their colleagues, interested in the heavier industrial features, such as smelting and ore concentration, are part of a related field called industrial archaeology.

Historical archaeologists have shed much light on mining landscapes. Their painstaking field work often results in a wealth of information that is not otherwise visible in the landscape. Historical archaeologist Ronald Reno has noted that, "there are four major types of archaeological studies of mining camps: model, inventory, assessment and mitigation."<sup>13</sup>

Reno states that a model based on a review of existing literature would predict distributions of cultural remains—what we might expect to find *before* field work is completed. Inventory includes all information that has been obtained from archaeological surveys. Assessment includes surveys of historic properties and historic significance completed for National Register nominations. Mitigation refers to work done in response to projects that are likely to disturb, perhaps

actually destroy, a particular historic mining site.

In the latter case, renewed mining activity is often an issue. In fact, Reno noted that "the areal destruction caused by the shift from underground to open pit methods and the large scale of work required for companies to turn a profit is unprecedented in Nevada."<sup>14</sup>

Among the most important information revealed by historical archaeologists are patterns that express themselves on at least two levels: vertically on a social scale, where artifacts may be used to determine the social status of the artifact's user in the community, and, horizontally on a geographic scale,

where the actual spatial organization or layout of the community is determined. Historical archaeology field work by Pat Martin, for example, has shed much light on the location of ethnic communities in the Copper Country of Michigan's Keweenaw Peninsula. Field research by Don Hardesty has helped clarify social and developmental conditions in several Nevada mining districts.

Historical archaeology's value in answering important questions about the mining's impact on the landscape was underscored by a recent study that applied dendrochronology techniques (tree ring analysis) in the Cortez mining district of Nevada. Researchers determined that the:

...tree-ring record of historic archaeological features, including stump and construction materials, provides an absolute chronology for the varying woodland use through time and for other human activities using pinyon logs. These data provide details of the magnitude and history of deforestation unavailable in other lines of research.<sup>15</sup>

The authors correlated the use of pine trees throughout the

major time periods or phases of the mining district's development with the existing stands of vegetation through time and concluded that "correlation of tree ring data with other data bases reveals changes in woodland use and structure to be mainly associated with mining activity," but that "the presence of old age trees indicates that the magnitude of the 19th-century deforestation may have been less severe at Cortez than is claimed for other mining districts."<sup>16</sup>

Two historical archaeologists, David Gradwohl and Nancy Osborn, have conducted extensive field research at the site of a long-vanished coal mining town, Buxton, Iowa, and wrote a book about their search entitled, *Exploring Buried Buxton*. When they first found the Buxton townsite in 1980, it was little more than a few forlorn ruins in an otherwise rural countryside of pastures and cornfields. Armed with historical information, they set about to find the lost town's features. Much of the place had begun to vanish almost 60 years before they began their research. Buxton was founded in 1900 and abandoned in the 1920s. "Standing in the middle of a patently featureless pasture, holding a panoramic view of Buxton as photographed in 1907 in one hand and in the other hand a town plat map drawn up in 1919," they began to ask several questions—the first being, "Where is Main Street?"<sup>17</sup>

With the help of their student interns and others, they began systematic archaeological work that uncovered the foundations and sites of houses and commercial areas. They soon experienced a situation that is typical of archaeological digs in mining communities: They found a nearly overwhelming quantity of artifacts. As the project developed, they saw patterns emerge; they found residential areas that revealed information about the lifestyle of laborers and managers. Their work, supplemented by primary and secondary historical records, helps one to better understand the social life of the largely Black mining community.

Clearly, many of our vanished historic mining districts have the potential to yield an incredible amount of information about both the occupants and the environment. Yet, our emphasis on the preserved or restored mining community/landscape obscures the fact that we may be able to learn as much from places with little above-ground remains. For every mining-related site on the National Register, there are dozens of others about which little or nothing is known.

It should be remembered that listing on the National Register can be a mixed blessing. The designation often attracts well-meaning development efforts that lead to a reconstructed postindustrial landscape at the expense of our historic understanding of the original mining landscape.

### *Historic Landmarks Associated with Mining*

The National Historic Landmarks (NHL) program focuses on sites of national significance that "...commemorate and illustrate the history and culture of the United States." These properties are identified by a theme. Mining-related resources are included under two main categories, westward expansion

and business. This is an interesting breakdown, for it reveals certain preconceptions about history, even among professionals. It tends to romanticize the westward movement, or, at least, remove it from its context of eastern financing. Moreover, it assumes that western and eastern mining activities were fundamentally different when, in fact, they were part of the same industrial system.

Because only nationally-significant, well-documented properties may qualify for listing as National Historic Landmarks, it may be thought of as a refinement of the National Register program. Describing the process by which mining-related NHLs were selected in the early years of the program, NPS staff historian Robert Spude, notes that "the historic sites and building inventory looked at over 100 mining sites and selected 17 as potential National Historic Landmarks...unfortunately, the NPS evaluation system reflected the popular view of looking only at the towns, rather than at the mines or mills," and "thus, significant mine structures or mills standing at the time were not recognized."<sup>18</sup> This oversight—a disregard for the engineering features of a mining district and a fascination with their residential or commercial architecture—remains a problem. It has certainly yielded a lopsided or distorted visual legacy in the preserved historic mining landscape.

However, as it has evolved, the National Historic Landmark program has become more comprehensive and inclusive. Thus, Jacksonville, Oregon, is also listed as a National Historic Landmark under "westward expansion," as is the Bodie Historic District in California. A number of the classic mining extraction sites, such as Minnesota's Hull Rust open pit mine, are NHLs associated with "business," as is the mansion of steel magnate, Andrew Carnegie, and the Elkins Coal and Coke Company historic district in West Virginia. There are now about 50 mining-related NHLs.

### *Conclusion*

Mining landscapes are preserved for one of two basic reasons: recreational (often through private commercial ventures) and educational (often overseen by the public sector). We are either supposed to have fun or to learn something from such landscapes. In reality, of course, many preserved mining landscapes fall somewhere in between in intent and content. These are interactive landscapes. As we experience them using our leisure time, they often convey political/social agendas (for example, the virtues of private enterprise or the importance of labor organization) that we assimilate as consumers.

As with all historically contrived landscapes, preserved mining landscapes are complex. Many are not accurate; postindustrial (current) sentiments affect what is preserved. Preservation advocates operate using certain biases that result in selective preservation. Therefore, historical geographers need to approach any preserved mining landscape with a great deal of caution.



The state of South Dakota has recently authorized casino gambling in the old mining town of Deadwood. One of the reasons for this decision was to raise money to revitalize the town's historic buildings. The tax money has helped meet the goal, but the change in the town's focus has resulted in many other social changes, such as new population, new development, displacement of low-income residents and much higher real estate prices. Small Towns Institute photograph.

A look at the Blue Heron Coal Mining Camp on the Big South Fork of the Cumberland River in southern Kentucky is instructive. The U.S. Army Corps of Engineers developed the property into an interpretive historic site and recently (1991) turned it over to the National Park Service.

Winner of a Federal Design Achievement Award in 1992, the camp is reached by road, or, better, by excursion trains of the Big South Fork Scenic Railway.<sup>19</sup> Upon arriving in the camp, the visitor finds a coal tippie looking much as it did in the 1930s, but the rest of the landscape—a church, company store and miners' houses—consist of ghost structures which "...are a reflection of the skeletal remains of a once-thriving community and are intended to convey the spatial relationship of the community that was once there."<sup>20</sup>

At this former mining camp, preservationists and interpreters have attempted to integrate a corporeal scene of implied activity around the tippie (under which stand numerous coal hopper cars) with the ghosts of buildings and people whose stories are told through an audio program. It is significant that "the ghost structures are designed to blend into the surrounding environment and to withstand the periodic flooding, achieving an aura of ghostly immortality,"<sup>21</sup> something that

could never be said of the original camp. At Blue Heron Camp, we see our culture's attempt to make former mining landscapes more bucolic and idyllic than they ever were.

The landscape contains other messages too, and the major lessons learned from preserving mining landscapes fit into several categories that correspond to cultural issues.

*Man-Nature Reconciliation.* At the Blue Heron Camp, and many other restored or preserved mining camps, the most visible features of mining—the waste dumps and other unpleasant signs of environmental degradation—are often removed to present a scene of natural beauty that disguises the full extent of the former mining activity. If not actually removed, such features are often stabilized or revegetated. These actions reassure us that man's activities are reversible, if not ephemeral.

*The Creation of Artifactual Symbols.* A study of preserved mining landscapes reveals that certain features, such as headframes and ore hauling equipment, come to symbolize mining activity and are preserved as landscape icons. Other less associative or poorly understood features, such as ore sampling equipment, may be considered too mundane to be preserved and, therefore, disappear. Whereas active mining

landscapes contain features (machinery, buildings and structures) that are associated with a full range of activities, usually only those that symbolize ore extraction and sometimes ore processing remained in preserved mining districts.

*The Preservation of the Aesthetic.* While attempting to preserve the significant or valuable material culture associated with the past, historic landscapes inevitably satisfy aesthetic sensitivities. Thus, in preserved mining landscapes we find impressive (sometimes beautiful) features such as arched coke ovens and attractive Victorian miners' homes being preserved. One rarely sees rows of shacks preserved. Rather, those that feature some trim or indications of architectural "style" remain. Likewise, the chaotic assemblages of discarded equipment characterizing active mining operations are reconstituted as "artifact gardens."

*The Reinterpretation and Reaffirmation of Power.* Active mining landscapes, especially company-owned towns, exhibit the strong role of owners and managers in decision making. Through selective preservation, power may be reinterpreted or reaffirmed. In Thurber, Texas, for example, the tension between labor and management in this former Texas and Pacific Coal Company town is nowhere apparent today—the company removed all of the miner's wooden homes years ago when it abandoned the town.<sup>22</sup>

*The Reaffirmation of Gender.* Active mining landscapes are "male" landscapes in that men shaped virtually all of the mining, transportation and settlement patterns. They remain so. Symbolically, tall smokestacks and erect headframes are among the most commonly preserved features in the mining landscape—as a look at Butte and Anaconda, Montana, reveals. Mining landscape preservationists are beginning to discover an important, but invisible, role of women in community life. Often, however, only the bawdy houses and homes of the mining managers (whose wives were influential in community affairs) are preserved and interpreted. We can expect this to change as an appreciation of the role of women in the life of mining towns grows.

In retrospect, the concept of a preserved mining landscape is a contraction in terms, for active mining landscapes are in a constant state of flux and, therefore, are impossible to stabilize without compromising the integrity of the processes that created them. Those that are preserved are usually sanitized to satisfy health, safety and aesthetic standards that simply did not exist when they were created. Nevertheless, preserved mining landscapes are important postindustrial environments that tell us much about the way contemporary cultures reshape the past to meet the needs and values of the present.

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<sup>2</sup>Thomas R. Vale and Geraldine R. Vale, *Western Images, Western Landscapes: Travels Along U.S. 89*, Tucson, Arizona: University of Arizona Press, 1991, p. 48.

<sup>3</sup>William Ralston Balch, *The Mines, the Miners, and Mining Interests of the United States in 1882*, Philadelphia, Pennsylvania:

Mining Industrial Publishing Bureau, 1882, p. 769.

<sup>4</sup>Lucius Beebe and Charles Clegg, *Narrow Gauge in the Rockies*, Berkeley, California: Howell-North Press, 1958, p. 8.

<sup>5</sup>Knott's Berry Farm, *Ghost Town and Calico Railway*, Buena Park, California: Knott's Berry Farm, 1953, p. 59.

<sup>6</sup>Knott's Berry Farm, 1953, p. 59.

<sup>7</sup>*A Gallup Study of Public Attitudes Towards Issues Facing Urban America*, 2 vols., Washington, D.C.: Urban Land Institute, 1986.

<sup>8</sup>Leo Barker and Anne E. Huston, *Death Valley to Deadwood; Kennecott to Cripple Creek—Proceedings of the Historic Mining Conference, January 23-27, 1989, Death Valley National Monument*, San Francisco, California: National Park Service, September, 1990.

<sup>9</sup>William Murtagh, *Keeping Time: The History and Theory of Preservation in America*, Pittstown, New Jersey: The Main Street Press, 1988, p. 215.

<sup>10</sup>Randolph Delahanty and Andrew McKinney, *Preserving the West*, New York, New York: Pantheon Books, 1985, p. 123.

<sup>11</sup>Delahanty and McKinney, 1985, p. 125.

<sup>12</sup>Utah State Historical Society, Historic Preservation Office, Salt Lake City, Utah, National Register Nomination, the Tintic Mining District.

<sup>13</sup>Ronald Reno, "Archaeological Studies of Nevada Mining Camps," paper presented at the Society for Historical Archaeology Annual Meeting, Reno, Nevada, January, 1988.

<sup>14</sup>Reno, 1988, p. 2.

<sup>15</sup>Eugene M. Hattori and Marna Ares Thompson, "Using Dendrochronology for Historical Reconstruction in the Cortez Mining District, North Central Nevada," *Historical Archaeology*, Vol. 21, No. 2, 1987, pp. 69-70.

<sup>16</sup>Hattori and Thompson, 1987, p. 71.

<sup>17</sup>David Gradwohl and Nancy Osborn, *Exploring Buried Buxton: Archaeology of an Abandoned Iowa Coal Mining Town with a Large Black Population*, Ames, Iowa: Iowa State University Press, 1984, p. 5.

<sup>18</sup>Robert Spude, Historic Mining Conference, *CRM Bulletin*, Vol. 13, No. 4, 1990, pp. 16-18.

<sup>19</sup>"Designers Win Arts Award for McCreary Mine Camp," *Lexington Herald-Leader*, January 19, 1992.

<sup>20</sup>National Park Service, U.S. Department of the Interior, "Blue Heron Community," brochure of the Big South Fork National River and Recreation Area, n.d., n.p.

<sup>21</sup>"Blue Heron Community" brochure.

<sup>22</sup>Richard Francaviglia, "Black Diamonds and Vanishing Ruins: Reconstructing the Historic Landscape of Thurber, Texas," *Mining History 1994 Annual*, Vol. 1, No. 1, 1994, pp. 51-62.

# How to Keep Qualified Teachers in Small School Districts:

## What Administrators Need to Know

by June Canty Lemke

Why do school districts in small towns and rural areas find it so difficult to attract and retain qualified teachers? How can these districts compete with larger and urban districts? Administrators in small and rural districts throughout the country continually contemplate these questions.

### *Beginning Teachers Face Obstacles*

Across the country, school districts, large and small, are experiencing very high teacher attrition rates: Twenty-six percent

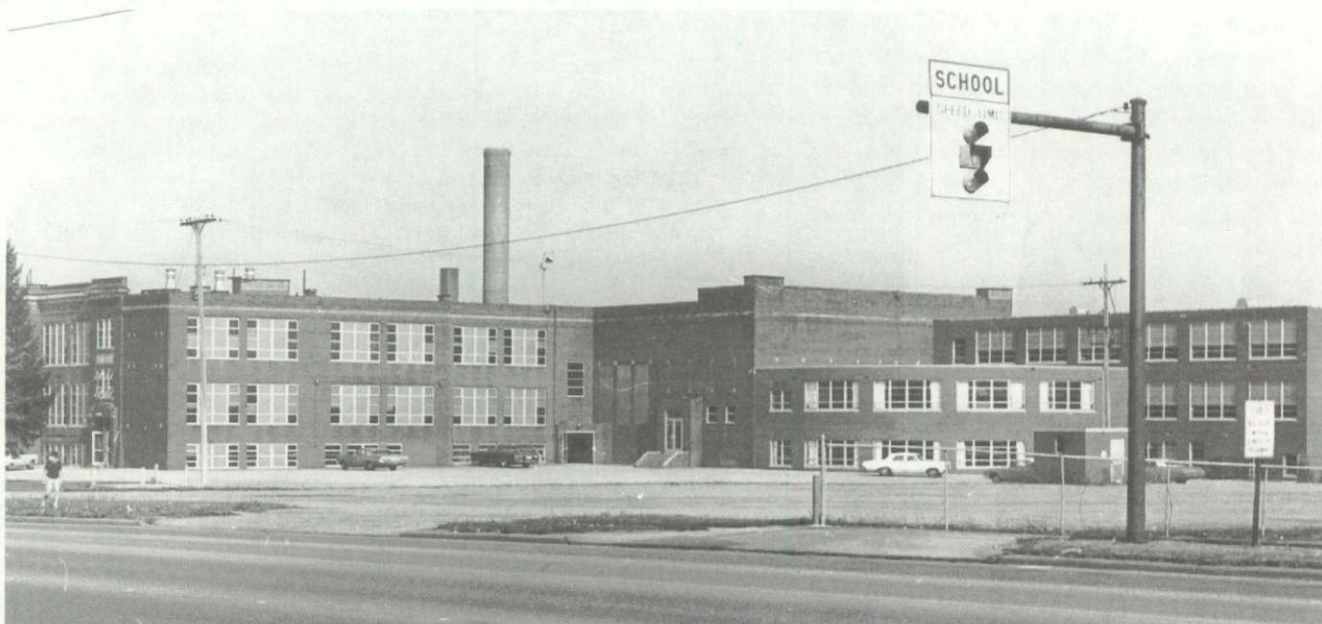
of new teachers leave the profession after their first two years. Sixty percent leave after their first five years of teaching. These teachers frequently cite two reasons for leaving their previous jobs: They accept a job that pays more or are unable to cope with the problems of teaching.<sup>1</sup>

The major problems that beginning teachers share include classroom management, student discipline and adjusting to the physical demands of teaching. Other problems include difficulties managing interpersonal relationships with parents and staff, sacrificing leisure time and justify-

ing their work demands to others outside the workplace.<sup>2</sup>

### *Problems Are Intensified in Small School Districts*

Rural and small schools represent a sizable portion of the education system—about 67 percent of all schools—and employ approximately 50,000 teachers.<sup>3</sup> The problems these districts face are real and deserve attention. Recent research shows that the needs of small district teachers differ significantly from those



*Small school districts face enormous challenges in attracting and retaining school teachers. Many teachers are not equipped to deal with the types of problems found in small districts, such as limited resources, low pay and problems concerning fitting in with the community—especially if the teacher is not used to small town life. Small Towns Institute photograph.*



of teachers in urban and suburban districts which employ larger staffs and can utilize expanded resources.

Beginning teachers, new to rural districts, must not only cope with the normal stress all teachers face, but must also deal with adjusting to geographic isolation, population scarcity and difficulty fitting in with the community and its lifestyle.<sup>4</sup> As a result, rural school districts suffer turnover rates of between 30 and 50 percent. This often culminates in a complete turnover of the teaching staff every three years. It is not uncommon for districts to report difficulties in securing qualified applicants for positions that have remained vacant for long periods of time.<sup>5</sup>

However, teachers also cite many *positive* reasons for working in small schools and communities, including small class size, increased opportunities for individualized instruction and the chance to know each child as an individual, fewer behavioral problems, less bureaucracy and greater student and parent participation in school and school activities. Small district teachers also believe that they produce a greater impact on the curriculum.<sup>6</sup>

Nevertheless, problems finding qualified teachers for these positions still loom darkly over small and rural schoolyards. The ideal requirements for rural school

teachers include having teaching certification in more than one subject area or grade level, possessing the ability to teach students with a wide range of abilities (and often different grade levels) within a single classroom and exercising insight to help overcome students' cultural differences and add to their understanding of the larger society. In addition, rural



*Teachers possessing qualifications in many different areas are very attractive to school administrators in small districts. A teacher who is also skilled in instructing art or music or who can help coach sports or assist in other extracurricular activities, in addition to his or her regular teaching position, will likely find it easier to gain employment. Small Towns Institute photograph.*

school teachers must often also be willing to supervise several extracurricular activities. Outside of the school environment, they face adjusting to their new communities' uniqueness in terms of social opportunities, lifestyles and loss of privacy.<sup>7</sup>

### ***School Administrators Can Ease the Burden***

To assist new teachers, small school district administrators can offer orientation programs held before the school year starts. They may pair the new teacher with a master teacher, assign the new teacher an out-of-class project requiring interaction with other school personnel and make regular visits to the beginning teacher's classroom.<sup>8</sup>

Administrators can also provide for increased inservice practices—initially reducing teaching and other instructional

responsibilities for new instructors and increasing the time allowed for planning and organizing. Administrators might also support opportunities for new teachers to observe their more experienced colleagues or allow beginning teachers time for group interaction to talk about their concerns and solutions.<sup>9</sup>

Once a small school district acquires qualified teachers, it must also work to *retain* them. Possible enticements include reimbursing teachers' dues for professional association memberships, providing opportunities for sabbatical and faculty exchange programs, and reimbursing tuition and providing release time for travel to professional meetings. Administrators might also consider giving salary increments for teaching assignments which require multiple subject areas or various grade-level responsibilities.<sup>10</sup>

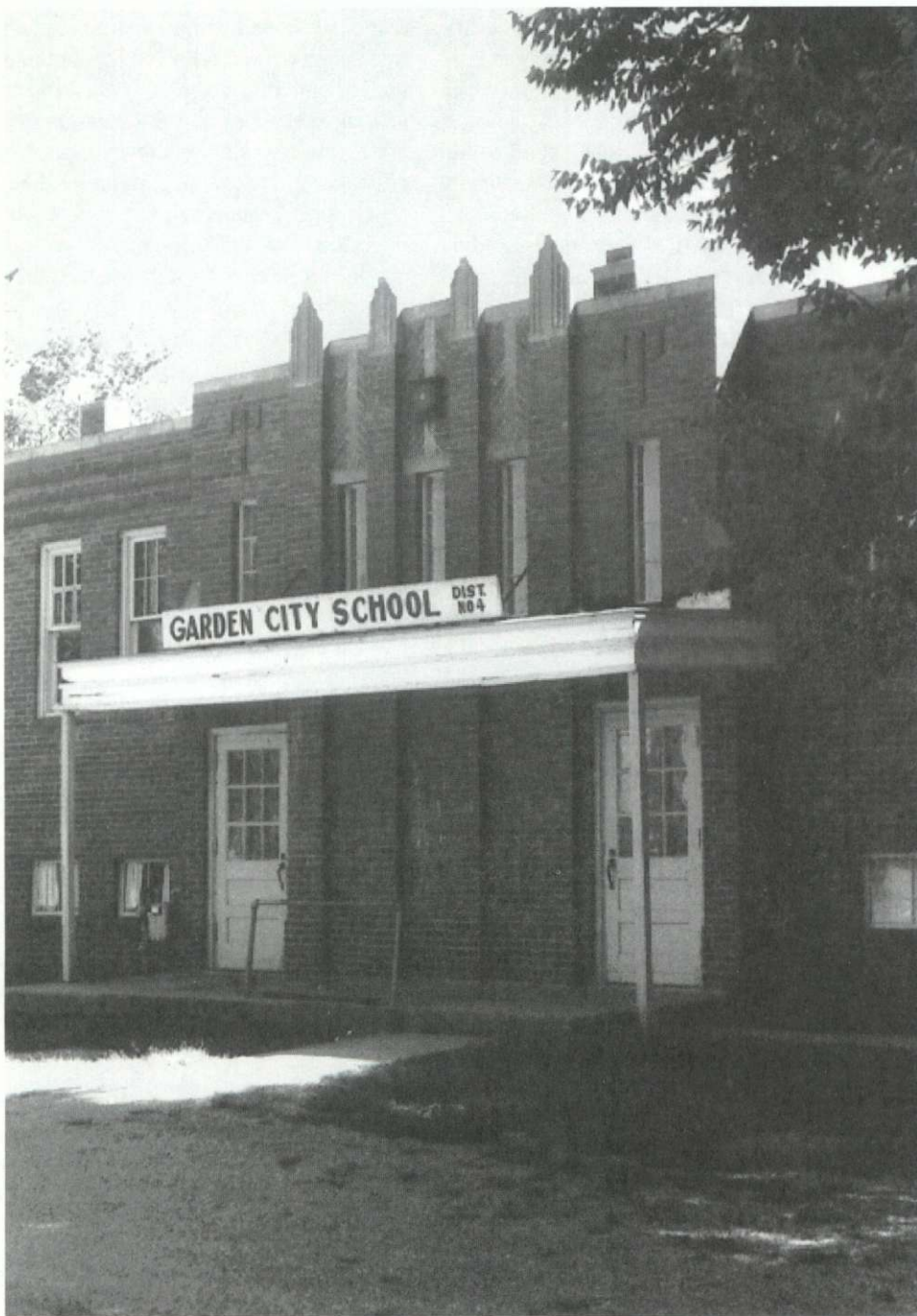
Small school districts could compensate for a lack of educational resources by utilizing alternative instructional formats such as cable and two-way television systems and other correspondence courses. In addition, several districts might develop regional inservice education centers to pool resources.

### ***Are Administrators Adequately Prepared?***

Rural or small school district administrators clearly must have special training if they are going to be successful in recruiting and retaining qualified teachers. Are they prepared for these challenges?

Recently, a research project was conducted to determine if colleges are adequately preparing administrators to recognize the differences between the approach necessary for rural schools ver-

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*Although universities and colleges providing teacher education believe that coursework regarding teacher induction is important, only 7 percent of approximately 306 institutions surveyed reported that they required classes or coursework specifically targeted to educate administrators about teacher induction in rural or small schools. This topic is especially important, considering that over 26 percent of all new teachers leave the profession after only two years and 60 percent leave after their first five years. These numbers could be lowered, especially in small and rural districts, if administrators are aware of and practice strategies which can ease the burden for new teachers. Perhaps one of the most important among these techniques is to keep the lines of communications open. Administrators should allow teachers both new and established to talk with each other about concerns and solutions. Administrators should also be helpful in assisting teachers with adjusting to rural life and establishing themselves in the community. Small Towns Institute photograph.*

sus that for urban schools. The researcher randomly selected 306 institutions across the United States and received 135 responses for a 44 percent return rate. Of these, 54 met the qualifications of the researcher and provided useful data.

Three basic questions were used in the analysis of the data. First, is this topic (teacher induction) covered adequately in the program? Second, do program directors see this as an important topic?

Third, do program directors see a difference in approach for rural and small school administrators? In other words, are the directors aware that there should be a difference between urban schools and rural schools?

Sixteen schools (30 percent) had courses in which teacher induction in generic (any school) settings was addressed. Twenty-two schools (41 percent) had courses in which teacher

induction in generic *and* rural or small schools was addressed. Only four schools (7 percent) reported that they had coursework specific to teacher induction in rural or small schools. Twelve schools reported no administrative services program (thus no coursework related to teacher induction), but made comments about the importance of the topic (ten favorable and two unfavorable).

The most interesting finding was that

all administrative services programs sampled address the topics related to teacher induction in either a major or minor focus in at least one of their courses. No one disputes the need for this preparation. However, very few institutions addressed the differences in teacher induction when teachers are employed in rural or small schools—the same courses are taught to *all* prospective administrators. Several program directors commented that they were aware of the differences, but were suffering from a lack of financial resources to develop courses specific to the needs of administrators and teachers in rural or small schools. Thus, they were only able to address these issues in their regular courses when questions specific to rural or small schools arose.

### Solutions

Many small school districts are already providing beginning teachers with some support services. However, some types of assistance, such as helping teachers adjust to the local community, are still not available. And, lower salaries in rural districts also remain a prevalent problem.

Teacher educators, realizing these problems, have heightened concern about revising their programs in order to make them more effective. Suggested strategies include adding information specific to teaching in rural and small school districts into existing courses and including a program of small and rural district field experiences in the teacher training curriculum—making potential teachers aware of both the benefits and drawbacks of working in these districts.

With this accomplished, perhaps newly graduated teachers will seek employment with a realistic view of what a long-term commitment to teaching in small towns involves. The university's role should not end there, however. These schools must also enable teachers to participate in graduate programs on-site, by television or through some other innovative delivery technique, enabling teachers to continue their training without traveling to urban areas.

In addition, teacher educators must revise administrative training programs to include adequate preparation for the tasks of recruitment, orientation and retention of small town and rural district teachers. Generic training in these areas is no longer sufficient to meet the personnel needs in these districts.

Rural schools can further help the situations in their districts by working cooperatively to devise teacher recruitment ideas or by developing joint inservice and continuing education programs. They might also consider more flexibility in granting credit for prior teaching experience.

Small and rural school districts' concerns about recruitment, orientation and retention, and the needs of beginning teachers are real and deserve continued attention. These problems will not disappear. And, in order for the quality of education to continue strong, they must be addressed.

<sup>1</sup>M. Henry, "Strengths and Needs of First-Year Teachers," *Teacher Educator*, Vol. 22 No. 2, Autumn, 1986, pp. 2, 10-18.

<sup>2</sup>D. Myton, *Study on Needs of Beginning*

*Teachers: Executive Report*, Salem, Oregon: Teacher Standards and Practices Commission, 1984, p. 8 (ERIC ED 275 626).

<sup>3</sup>D. Swift, *Finding and Keeping Teachers: Strategies for Small Schools*, Las Cruces, New Mexico: ERIC Clearinghouse on Rural Education and Small Schools, 1984, p. 1 (ERIC ED 254 377).

<sup>4</sup>J. Horn, *Recruitment and Preparation of Quality Teachers for Rural Schools*, Kansas City, Missouri: National Rural Education Forum, 1985, p. 4 (ERIC ED 258 785).

<sup>5</sup>D. Helge and L. Marrs, *Recruitment and Retention In Rural America*, Murray, Kentucky: National Conference on Special Education in Rural Areas, 1981, pp. 2, 12 (ERIC ED 199 022).

<sup>6</sup>J. Miller and D. Sidebottom, *Teachers: Finding and Keeping the Best in Small and Rural School Districts*, Arlington, Virginia: American Association of School Administrators, 1985, p. 3 (ERIC ED 254 377).

<sup>7</sup>A. Campbell, *Components of Rural School Excellence*, Kansas City, Missouri: National Rural Education Forum, 1985, p. 7 (ERIC ED 258 783).

<sup>8</sup>Miller and Sidebottom, 1985, p. 26.

<sup>9</sup>Swift, 1984, p. 2.

<sup>10</sup>Swift, 1984, p. 2.

*In rural areas, transportation is not only a continuing problem for the children, but also for their teachers, who must attend graduate courses to continue their education. One solution to this problem would be for universities to provide training on-site or through television or video conferencing. This way, teachers can get the additional training they need without having to travel to far-off urban areas. Small Towns Institute photograph.*



# Managing Growth Along a Rural Highway Corridor:

## The Role of Zoning on a Pennsylvania Highway

by Jack J. Ford

The role of a rural highway changes as the role of its adjacent land evolves from agricultural to nonagricultural uses. This evolution, if it goes unsupervised, can pose disastrous impacts on many rural governments. A rural highway that is experiencing changing land uses requires careful planning and continual scrutiny in order to prevent roadside sprawl. The research involved in this article chronicles the historic land use changes that have occurred along one rural highway in south-central Pennsylvania.

### *Roadway History*

Pennsylvania Route 997 is a two-lane, rural arterial connecting two U.S. highways to an interstate highway. Historically, Route 997 linked agricultural land uses together with three small market centers. Originally, agricultural activities generated most of the roadway's traffic.

During the past 40 years, however, new levels of accessibility along the roadway encouraged a menagerie of com-

mercial, industrial and residential land uses. Today, traffic slows, not to accommodate slow-moving farm tractors, but, instead, to negotiate the gridlock and the crowded intersections that are unable to handle the traffic resulting from the high volume use.

### *The Route 997 Corridor Today*

Pennsylvania Route 997 connects U.S. Route 30, U.S. Route 11 and Interstate 81 in the vicinity of Shippensburg, Penn-



Many rural highway corridors face a transition similar to that found on the Route 997 corridor near Shippensburg, Pennsylvania. Here, prime farmland along the corridor is threatened by commercial land encroachment. Proper zoning regulation could ensure that problems such as traffic congestion are avoided or subdued. Photograph courtesy of Jack J. Ford.

sylvania. The corridor is about 7.7 miles long and, for study purposes, is defined as an area that lies three quarters of a mile to either side of the roadway. In all, the corridor contains about 10,500 acres.

The Letterkenny Army Depot (LEAD), located on Highway 11, one mile west of Greenvillage, Pennsylvania, generates most of the corridor's traffic. At its peak in the mid-1970s, LEAD employed about 6,000 civilians. With expected U.S. Defense Department reductions, LEAD may employ about 3,000 to 4,000 workers in the next decade. Route 997 is the major roadway used by workers and trucks headed to and from the depot—about 60 freight trucks enter or leave the facility on a typical day.<sup>1</sup>

Land uses change along various segments of the 997 corridor. Although the dominant land use activity remains agricultural, the corridor is now scattered with residential uses. And, the largest regional shopping center in the local market area lies east of the Interstate 81-Route 997 intersection. This regional shopping center has attracted other commercial and residential uses around it.

Residential lot sizes have decreased since public sewer became available. And, a number of very large housing projects are currently being built or are planned for this part of the corridor. From the White Church Road to the U.S. Route 30 intersection, most of the land uses are residential interspersed with cottage-like commercial activities. Most of the structures were built parallel to the roadway; there are not many feeder roads to provide alternative routes. Building styles do not conform with each other since they were constructed before the establishment of a zoning ordinance.

*Jack J. Ford is a Professor in the Geography and Earth Science Department, Shippensburg University of Pennsylvania, Shippensburg, Pennsylvania, 17257.*

### **The Corridor Study: The Data and Methodology Used**

The Route 977 corridor study centered on three variables: traffic volume, actual land use and zoned land designations. The Pennsylvania Department of



*Increased traffic volume along the Route 997 corridor has encouraged potential commercial land use amid residential areas. This change creates many problems—among them are further traffic congestion, an incongruity of building styles and a move toward decentralized land uses which is detrimental to the area's sense of community. Photograph courtesy of Jack J. Ford.*

Transportation (PADOT) provided information regarding traffic volume for 1975, 1985 and 1992.<sup>2</sup> Three sets of aerial photographs, taken in 1970, 1980 and 1990, were used to determine the land use patterns. Finally, researchers ascertained the amount of zoned land by overlaying the study area boundaries on top of Greenvillage's existing zoning map.

Researchers subdivided traffic volume into roadway segments and then graphically summarized the amounts using bar charts. The interpreted land use areas were digitized and inputted into AutoCAD software, which produced three scalar maps depicting changing land use and acreage data. Researchers compared land use and acreage change to traffic volumes for each time period. Finally, each zoned class was then compared with each land use class.

### **Traffic Volume on the Corridor**

According to PADOT, absolute traffic volume increased for all segments of the Route 997 corridor during the past 18

years. Several areas displayed greater traffic increases than other segments—this may be partially attributed to a major regional shopping center which opened in the early 1980s.

Overall, the largest relative changes in traffic volume occurred between 1975 and 1985. There was a noticeable slack period in traffic growth after 1985. Some possible explanations for this slackening might be:

- reduction in traffic traveling into Letterkenny Army Depot due to Defense Department cutbacks;
- traffic congestion along certain segments of the corridor forces people to use feeder roads; or

- the traffic survey may not have accurately portrayed peak hours.

However, if all of the development now proposed for the corridor is built, it is estimated that traffic will increase by 11,605 trips. By 1998, the sum of the actual and the anticipated traffic volumes will produce intense congestion and noise, severely impacting the land adjacent to the corridor.

### **Analysis of Land Use Change**

Researchers analyzed land usage to determine the number of acres located in each land use class and to calculate the change occurring over time. Additionally, they used aerial photographs to spot areas similar in tone, surface roughness, shape and association. Each set of images provided an assessment for the 1970s, the 1980s and the first portion of the 1990s for the following categories: single-family residential, multiple-family residential, commercial/institutional, agricultural cropland, agricultural orchard

land, industrial land, recreational land, forested land and unused land.

Agricultural cropland and forested land comprise the largest proportion of the total study area. Forested land and commercial land exhibited the smallest change in land use for the three time periods. However, agricultural cropland fluctuated by about 13 percent between 1975 and 1992. One explanation for the variability may be related to crop subsidy policies which were more generous in the late 1970s and early 1980s than later in the 1980s.

Agricultural orchard land, unlike crop and pasture land, significantly decreased during the 1980s and into the 1990s. The relative decline is explained by the fact the new residential areas expanded into the orchard lands situated within close distance to Route 997.

Idle or unused land also exhibited variability from one period to another. Unused land is that which, interpreted from aerial photographs, holds no visible economic utility. (However, areas such as poor-quality pasture land may have short-term economic utility not evident from the photographs.) During the 1980s, people acting as land speculators may have maintained such undeveloped land in hopes of obtaining a windfall profit from future development. Therefore, the researchers had anticipated large variability within the idle/unused class.

The residential-multiple family category showed consistent, positive growth from 1970 to 1990. This growth may, in part, stem from expanded sewer lines which were installed parallel to Route 997. Increased residential density, occurring when officials make public water and sewer available is a national trend.

Forested land and agricultural croplands were the most stable of land uses while residential, commercial and agricultural orchard land uses exhibited noticeable fluctuations from decade to decade. Agricultural orchard land and recreational land, both showing unstable use patterns, will continue to change as land in the corridor is con-

verted to more intensive economic uses in the future.

### *Analysis of Zoned Areas*

By zoning land for specific uses, local governments can regulate the type and intensity of land uses within their jurisdictions. Zoning regulates the height, bulk, location and, foremost, the intensity of land uses. An excess of commercially zoned land could encourage increased traffic levels. Therefore, the ability to zone land adjacent to a growing highway corridor gives governments the ability to mold future traffic flow along the roadways. The entire Route 997 corridor is covered by one zoning ordinance enacted in 1974 and updated in 1984.<sup>3</sup>

However, the Route 997 corridor displays areas of major discrepancies between the existing land uses and the actual zoning designations. Moreover, the current zoned land uses represent many potential areas for future expansion. A comparison of existing and zoned land uses portends the direction that future development likely will take.

Zoned districts have conditional and permitted land use practices. A permitted use is one which the zoning ordinance simply allows, as long as all restrictions mandated by the approving agency for that district are met. A conditional use is allowed in a district once the users show that all necessary conditions mandated for the location are met.

Along the Route 997 corridor, agricultural and low-density residential districts contain the fewest permitted and conditional uses, while the two commercial districts, on the other hand, contain the largest number of permitted and conditional uses. This indicates that zoning restrictions are more rigidly enforced in residential, rather than nonresidential, areas. More noncommercial uses are allowed within commercial districts than nonresidential uses in residential districts.

If noncommercial uses are allowed in commercial areas, then the potential for decentralization of land uses away from designated residential areas is very high. Along the Route 997 corridor, zoning

allows single-family detached structures in all of the zoning districts. It is the desire of the local community to preserve both the low density and the rural nature of area.

The small relative area of the commercial districts leads one to conclude that increased residential (rather than commercial) conflicts will arise in the future. The potential for land use conflict increases as the decentralizing impacts of residential and commercial development continue along the corridor.

Forty percent of the corridor is composed of agricultural land. That means that 4 out of every 10 acres along the corridor have the legal potential to expand into more intensive land use. In addition, the study showed that institutional uses could expand to 50 percent of the corridor area, industrial land use could locate on 70 percent of the area, 100 percent of the area could be used for recreational purposes and, finally, commercial and multiple-family residential could locate on one third of the corridor's area.

### *Conclusions*

Change is the overriding theme of this study. In 50 years, Route 997 has changed from a rural collector linking agricultural nodes into a two-lane arterial with a varied pattern of commercial and residential land uses. As a result, traffic has increased in volume. Traffic predictions for the future show that the increases will continue.

Each development at each location in the corridor can, in itself, influence traffic volume along the entire corridor for the next 20 years. Most of the land developers have the view that their developments exist solely at the tax parcel level, not at the corridor level. Therefore, it is important for local governments to transcend this limited view and raise developers' sights to the corridor level. Developers then may be able to assess the overall impacts of their projects. Arterial corridors need to be treated as a whole and not just a collection of parts.

The following conclusions, though specific to the Route 997 corridor, de-



While farm tractors once used this highway corridor in relative solitude, growth in nearby Shippensburg, Pennsylvania, has changed the traffic to include retail and service users, commuters driving to work and regular residential travel. This type of corridor transition must not go unnoticed by officials. Photograph courtesy of Jack J. Ford.

scribe a policy that could be used to manage growth along any rural corridor. The conclusions are most meaningful for rural municipalities which have an arterial highway metamorphosing itself into a suburban arterial.

- Future large-scale residential development should be designed to increase the use of the minor, interconnected roads that intersect and run parallel to Route 997. Ideally, each subdivision should maintain its congestion within its own boundaries.
- Any major residential and commercial development should be required to provide "peak hour factor" traffic data for key intersections. The impact of this data should be considered when approving or rejecting all new development.
- The level of service along the corridor is influenced by the turning opportunities provided at the major intersections. When there are too many local turns, travel time is needlessly increased. New residen-

tial and commercial developments should attempt to design a road network that contains a minimum number of cross-highway turning opportunities from the arterial.

- The dispersed pattern of land uses along the corridor encourages excessive noncentral type of movement—resulting in longer trip lengths for even nonbasic goods and services. Abundant vacant land served by public water and sewer encourages the establishment of even more noncentral movement patterns. Officials must carefully monitor the conversion of vacant land to more intensive uses since this will impact future traffic volumes. The current regulation of vacant land along the roadway also encourages an almost unlimited number of permitted and conditional uses. Reducing the number of permitted and conditional uses within nonresidential areas could also produce more efficient future movement.
- Careful evaluation needs to be given to off-site impacts of large devel-

opments. Effective incorporation of traffic design principles may reduce some of the harmful impacts. For example, off-site impacts could be reduced by the incorporation of some or all of the following techniques: traffic channelization, left turn prohibitions, more warning signs and the development of an internal feeder road system.

- Various tools, such as overlay zones and site plan review, are necessary for good planning along a corridor. Unfortunately, highways are normally not specifically addressed in a community planning. However, communities should view highway corridors as unique components worthy of consideration in the next update of their comprehensive plans.

Route 997 has passed a threshold in its transition from a collector to an arterial. Many rural highway corridors are nearing this same threshold—but their local governments may not realize the need to guide this process. Visionary planning can direct the changes rural corridors face as they rapidly expand into the 21st century.<sup>4</sup>

<sup>1</sup>Based on a 1987 study entitled, "Natural Resource Management Plan for Letterkenny Army Depot," prepared by selected faculty from the Department of Geography and Earth Science at Shippensburg University.

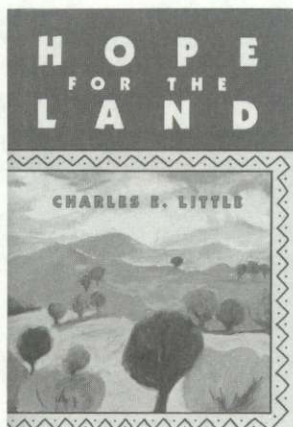
<sup>2</sup>Since some data were collected at slightly different time periods, researchers utilized PADOT-derived growth factors.

<sup>3</sup>Zoning Ordinance for Greene Township, Franklin County, Pennsylvania, n.p., May, 1984.

<sup>4</sup>The following publications provide excellent general sources for further research: V. Stover and F. Koepke, *Transportation and Land Development*, Institute for Transportation Engineers, Englewood Cliffs, New Jersey: Prentice Hall, 1988; and W. Homburger, *Transportation and Traffic Engineering Handbook*, Institute of Transportation Engineers, Englewood Cliffs, New Jersey: Prentice Hall, 1982.

## Hope for the Land Lies in Our Bonds with It

*Hope for the Land*, by Charles E. Little. Published by Rutgers University Press, 109 Church Street, New Brunswick, New Jersey, 08901, 1992; 228pp. \$24.95 (hardback).



This book needs to be on your bookshelf—not to serve as a didactic manual or a case study lesson (although this book contains these elements, too), but as a beautifully-written, almost poetic lament about the abuse and neglect of America's land. Place *Hope for the Land* up there next to your Aldo Leopold and Henry David Thoreau. And, if you don't have works by those authors on your bookshelf, get thee to a bookstore.

Charles Little writes with humor, insight and great love for America's land—from the national parks to the farms and the dairylands and all the landscape in between that flies by past our car windows. He gives to the nondescript, color; to the mundane, grandeur. None of it undeserved. What could be more worthy of our respect than land?

Please excuse me if I sound a bit like Scarlett O'Hara squeezing that fertile plantation soil in her fists with determination in *Gone With the Wind*. This book tends to make a person feel that way. When Little throws out gems like: "What hierarchical perversity has led to the tacky commercialization of the so-called gateway communities at the entrances to our national parks? How is it that the beautiful landscapes of national parks and national monuments can be framed by such greed and ugliness that it blasphemes the landscapes within? Do we

put a neon tube with little bubbles around the Pieta?" you may hear yourself mumbling, "Yeah, yes, that's exactly right."

But therein lies a bit of a problem. Most people who read *Hope for the Land* will already agree with what Little has to say. He is preaching to the choir. In order to be truly effective, this book must break through its circle of admirers and reach those who don't really want to read it. Little needs to reach developers, dollar-sign-blinded farmers who want to subdivide their acreage, pastoral-illusioned urban expatriates and those leaders of towns and cities who would spend more time driving to the bank than walking out among their farmlands which are being covered by houses and layers of pavement.

Little's dream, as seen in *Hope for the Land*, is that this nation will develop a sustainable land ethic—one that applies to all land, not just the beautiful land or the wild-life-filled land. He believes that a patchy kind of a land ethic is too incomplete. Little says, "If an ethic is selectively applied is it still an ethic? Or is it just a hobby?"

How can we create and maintain this land ethic? Even people who realize what is happening often eventually turn numb when bombarded with all the atrocities—and Little is no exception. "I was benumbed by Washington's endless statistical analyses of land, including my own analyses," Little writes. "I longed to take a look at a real place in rural America—the kind of place that represented the countryside we were so afraid of losing." Little believes that we should get out in it. Better yet, he thinks that we should get our kids out in it.

Remember singing Woody Guthrie's song that goes, "This land is your land, this land is my land," in school? Why doesn't that message sink in? Perhaps it would have if our parents had not only taken us to the Grand Canyon that summer, but also to the field behind our house or to the swampy area under the overpass that is actually a living creek swarming with life.

Little touches upon this concept when he speaks about how devastated his son became when he spotted a fluorescent ribbon on a wooden stake hammered into the ground near his favorite play area. "'They can't,' he said. 'How can they do that?' He was twelve. I told him about property rights. 'Yes, but not this place.' Why not, I wanted to know. 'Well, they can't!' he explained, and put both his hands out as if to touch the scene, at once to enter it and let it enter him."

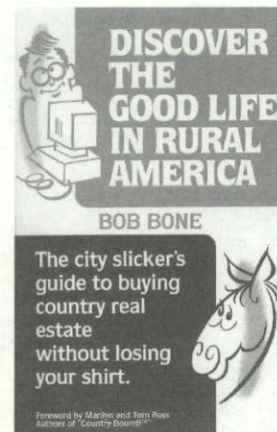
One might think that if we teach children about land ethics, rather than concentrating

on educating adults, our efforts will be too late. Land will be devastated in the meantime and there will be nothing left for the coming generations to save. To this I say, look at the person whom Charles Little endlessly quotes in this book, the great describer of nature, Aldo Leopold. Leopold—and his own inspiration, Thoreau—has been dead for some time now. Yet, despite his urging, we still don't have a reasonable land ethic.

Children grow up fast—faster than it takes some developments to be approved and built. I had to read Leopold's *A Sand County Almanac* in high school and have kept a copy ever since. Yesterday, for my niece's 5th birthday, I bought her a videotape of Dr. Seuss' *The Lorax*. If it's never too late to begin to develop a sense of the land, then it's never too early.—MT

## Buying Real Estate Equals Finding the Good Life?

*Discover the Good Life in Rural America: The City Slicker's Guide to Buying Country Real Estate Without Losing Your Shirt*, by Bob Bone. Published by Communications Creativity, P.O. Box 909, Buena Vista, Colorado, 81211, 1994; 152pp. (paper), \$19.95.



How would you like to escape the pressures of the morning two-hour commute, the increasing crime and violence of the city and the fear of coming into contact with diverse people? How would you like to move into the idyllic countryside, where problems evaporate, children have rosy



cheeks and people lead purposeful, fulfilling lives far from minority groups, drive-by shootings and random violence? Lots of people, especially in the field of real estate, want you to drop everything, pull up stakes and find your own personal nirvana in the countryside.

If the preceding sounds a bit sarcastic, the reason is because I live in an area being colonized by people who have left California or the urbanized regions of Washington State to find nirvana—a rose-colored vision of a homestead in the country, far from the pressures and unpleasantness of the rest of urban America. The 20-acre homesteads (each complete with a skinny horse feeding on a pasture far too small to support it) are appearing all over this county. Formerly productive farmland increasingly becomes 3-acre weed patches with \$200,000 houses on them since the lots are too big to mow and too small to farm.

*Discover the Good Life in Rural America* is just one of the books and magazines that smart, hustling entrepreneurs are writing in order to promote the “good life.” Some authors even organize clubs for countryside wannabes in cities. The authors of the tracts play on urban fears and encourage an almost mystical longing for a different and better life. They, without knowing it, are playing on a venerable theme in American history: The city is sinful and the countryside is virtuous. Thomas Jefferson would have agreed with this.

The authors confidently tell of the virtues now to be found in rural areas. Note one of the book’s chapter headings: “Which Way to Paradise.” Or, read the second paragraph of chapter one, “More than ever, people in the cities and ‘burbs’ of America are looking longingly to the country where it is perceived that the air is clean, the water is pure, the people are friendly, and life is safer.” Or, perhaps, read the last sentence in the book, “And I’ll wager ‘dollars to donuts,’ as my dad used to say, that they don’t lock their doors at night!” This is little more than another idyllic cliché—and the book is full of them.

Does it come as a surprise that the author of this tract is a real estate agent? Or, is it surprising that most of the ads found in the back-to-the-land magazines were placed by real estate agencies? It shouldn’t be.

Realtors have much to gain from selling 20-acre and 3-acre lots. They gain a commission—a commission on land that wouldn’t sell for nearly the same money if

it remained farm land. And, this land can be resold frequently. When the dream fades for one wave of exurbanites, a new wave can be exhorted to take their place. Writing books and magazines extolling the virtues of country life can be lucrative.

In fairness, *Discover the Good Life* contains solid information about buying and selling real estate and dealing with local zoning laws in order to enable a person to establish a home-based business. It also gives nuts and bolts information about the perils and pitfalls of living in the country—finding a water supply, for example. But, it is also a typical representative of a genre of literature that tells people to run from their problems in urban areas rather than solve them. It also fails because it uncritically tells people that a paradise awaits them in the countryside. Well, that’s not true. Their homesteads and their demands on the environment change the countryside forever. Maybe paradise existed before they came, but it is gone now. What they will get is not what they see.—KDM

## We Would Like to Extend Our Sincere Apologies

*All of us at the Small Towns Institute would like to offer our humblest apologies to Dr. James R. Edwards, author of “Citizens of History,” featured in our last issue, and to all of our readers who may have been confused by the garbled text which appeared in Dr. Edwards’ article. We are reprinting the correct paragraphs here and strongly urge that everyone read this excellent article once again. We, too, were frustrated and saddened at this unfortunate error. Space constraints limit reprinting the entire article, but the paragraphs at the end of column 1 on page 19 should have read as follows:*

“...We are all familiar with the expression, ‘world citizen.’ A world citizen is someone who values other peoples of whom he is not a part and other places where he has never been. Most of us are prepared to admit that such individuals are assets to civilization, for their knowledge and appreciation of other peoples and places not only leads to understanding and harmony among peoples, but to progress among nations—for no one people has mastered everything there is to know about life.

“Now if a citizen of the world is valuable, is not a ‘citizen of history’ equally valuable?

If a world citizen is someone who is not captive to his or her place, a citizen of history is someone not captive to his or her era. There is such a thing as geographic and ethnic provincialism. And, there is such a thing as chronological provincialism. If a world citizen looks around for insights and values, a citizen of history looks to those who have gone before in order to learn from, and, where possible, to appropriate such knowledge and values for the enhancement of the present. It is a simple idea. Intelligent people don’t have to be captives, either spatially or temporally. They can reach out to other peoples and cultures around them and before them.”

## Community Forum

*Community Forum* enables small town citizens to exchange information and ideas. If you have a local problem, try telling other *Small Town* readers about it here. Addresses are given so readers can contact writers directly.

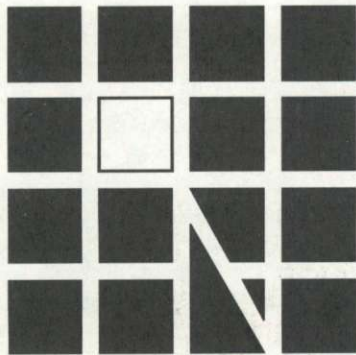
### *Reader Succumbs to BIC Pen at Wal-Mart*

I loved your editorial “The World from Main Street” in the May-June *Small Town*! I am not a shopper myself but I do have lots of friends and family members who feel that going to Wal-Mart is about the greatest thing in the world.

Recently, while in Texas, I had the opportunity to visit the largest Wal-Mart in the world—in Longview, Texas—and that night I couldn’t sleep for thinking about the shell that Longview (my hometown) had become—mainly because of all the shopping malls. It is a ghost town. But I felt, like you, I should buy something, anything. So since paper and pens are my things, I went to the stationery department. Yipes! I couldn’t make a choice from among the multitude of pens, notebooks, writing paper. I bought a pink BIC.

But what is the answer? The Small Towns Institute is doing a wonderful job keeping people informed. I have read it since 1978.

Jane Ray  
Yakima, Washington



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July-August, 1994

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Thrill-seekers ride the "Thunderation," a wooden roller coaster at Silver Dollar City near Branson, Missouri.

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# Wolcott Copper Mine

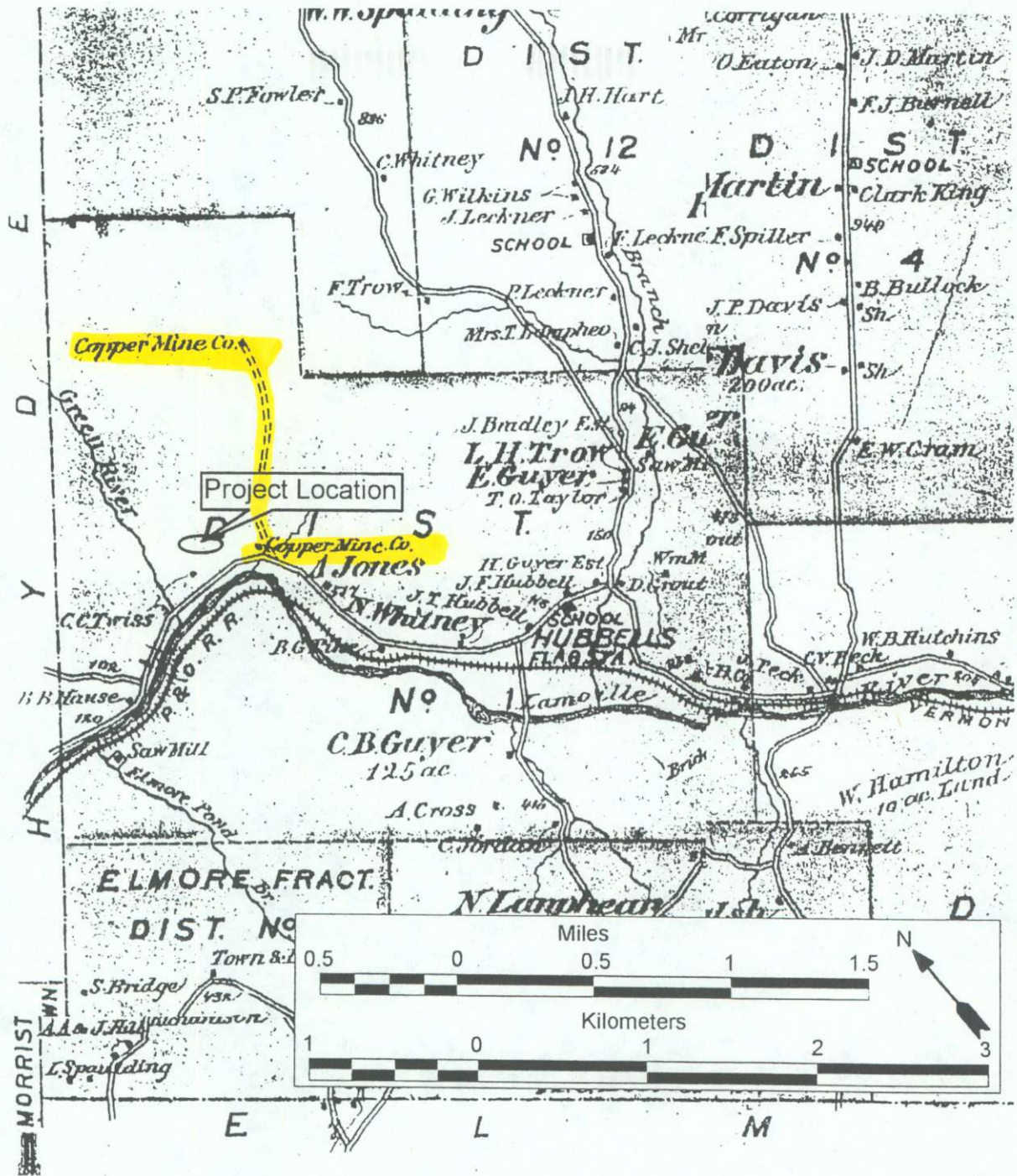


Figure 13: Beers' 1878 Atlas of Lamoille and Orleans Counties, Vermont showing the location of the proposed Salvas Gravel Extraction project in Wolcott, Lamoille County, Vermont.

Num: Doug Frink, ACT  
 Salvas Gravel Pit 12  
 Rept. 01/2002

### Concord, VT. – Copper Mines

February 10, 2003.

Received a phone call from a Carl Jaborek, 888-7481, inquiring what did I know about copper mines in Concord. I didn't know anything about them. He said there were 3 mines there between about 1860 and about 1887. Operated by the Essex Mining Co., 3 open pit mines with deep underground workings. He said apparently "the state" still owned mineral rights. A friend of his owns the land with 1 mine. His cousin has located a second shaft. Huge tailings pile. I put him in touch w/ Matt Kierstead.

Contact: Carl Jaborek  
(802) 888-7481  
[cmj390@aol.com](mailto:cmj390@aol.com)

**Peebles, Giovanna**

**From:** cmj390@aol.com  
**Sent:** Monday, February 10, 2003 12:32 PM  
**To:** mkierstead@palinc.com  
**Cc:** Peebles, Giovanna  
**Subject:** copper mines in concoed vermont

Matt

Giovanna peebles gave me your name and email address about information on copper mining in vermont.

I am writting you to find out about information on copper mining in concord vt. There are 3 open pit mines in concord vermont. Concorc vermont lays about 70 miles north of the Thetfford mines on the connecticut river. UVM has the mineral rights to these mines. I have also found some info in a book call Concord Then and Know. the info is copper was discovered in june of 1864. A company was formed called Essex Mlning Company it was incorporated in New York City in1865. There is also a couple of other mines that have not been located. My cousin says he has found the entrace to one of them. I am waiting to here back on information one this one. I am also trying to get hold of the land owner of where the shafts are to get permistion to look at the mines. I f you could tell me anything about these mines or how to get hold of information on mining in Concord Vermont i would appreciate. Please feel free to call or write about any information or if you have questions about info i have found.

Thanks

Carl Jaborek

802-888-7481

# Tyson

(Continued from page C1)  
the time.”

But it was innovations, as opposed to character, that earned him a place in the mining hall of fame. In Strafford, Tyson did pioneering work in copper-smelting at the mine head, according to Smith. He held a patent for manufacturing copperas. He was involved in early manganese mining in Vermont and Virginia, sponsored exploration for copper ore in Cuba, and developed sources of magnesite used in the production of Epsom salts. He was also involved in development of the Ely Mine in Vershire. “He had an inquisitiveness about him,” said

Johnsson, and apparently was most interested in minerals with practical uses. “He never searched for silver and gold,” he said.

If there were such a thing as a Strafford chamber of commerce, Tyson would not have been an early booster.

In the couple of years that he visited, he wrote that it was an “insulated and lonely” place when he was there without his family.

Ultimately, he gave up his Strafford operations, but his son, James Wood Tyson, returned and developed the South Strafford Elizabeth Mine that operated until 1958, and built the fam-

ily homestead, Buena Vista. The last descendant to work in the local mine was James Wilson of Strafford, who worked there for a year and a half after World War II. “For blue collar work, it was the highest pay around,” he said. “It was hard work, but it was exciting.”

Tyson’s photograph and a plaque will go up at the mining hall, located in a 70,000-square-foot Victorian schoolhouse that includes two walk-through replicas of working mines. It has 126 inductees, with 100 more waiting to be accepted by the board of governors, said spokesman Chuck Morris.

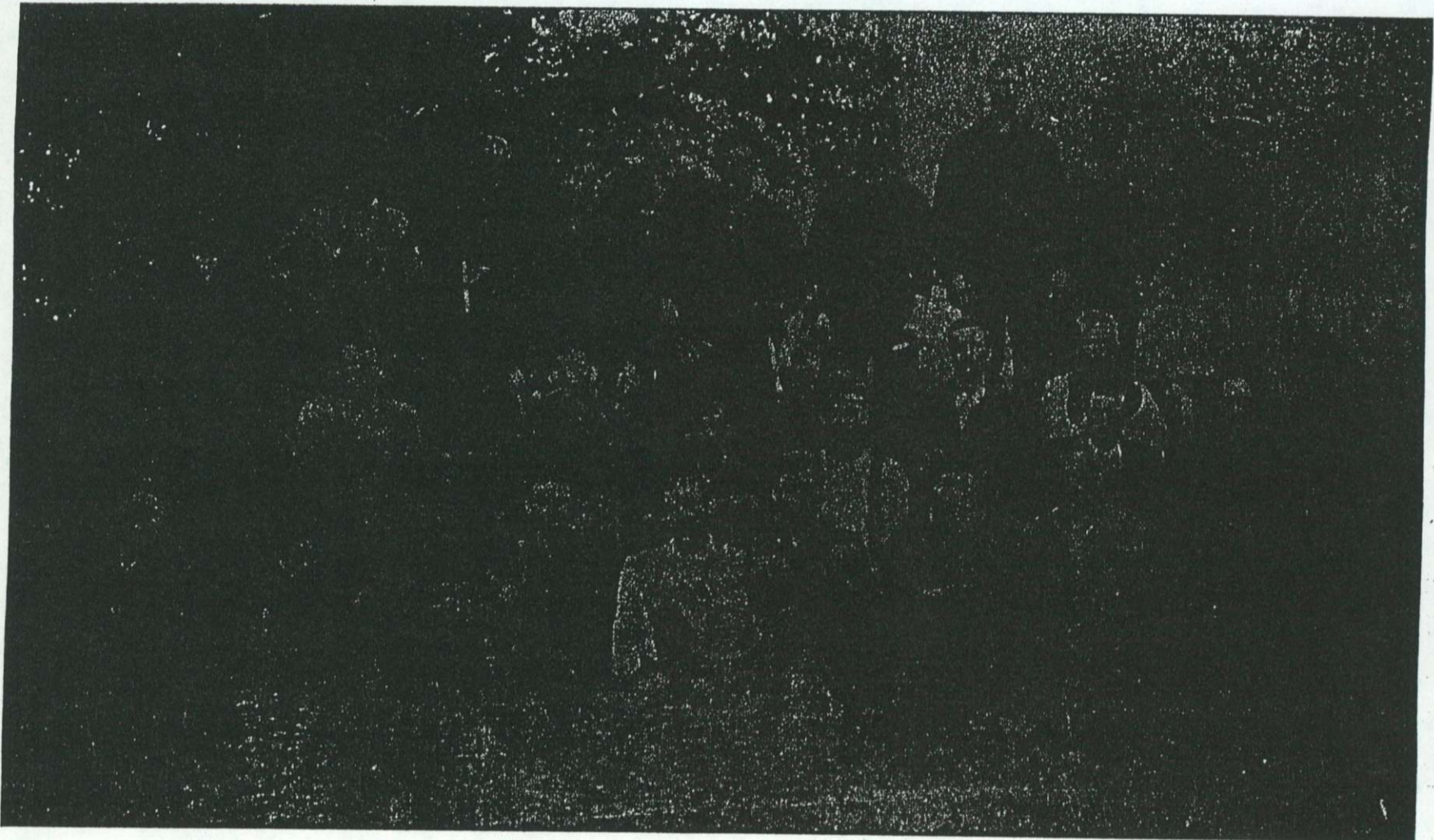
The induction banquet is being held in Las Vegas, a town about as foreign to Isaac Tyson’s Quaker background as could be.

Morris said the ceremony is usually held in conjunction with the annual meeting of the American Mining Association, which attracts 40,000 people.

Tyson joins other famous miners like Herbert Hoover, more successful as a mining engineer than a president, rock-drill inventor Simon Ingersoll of Ingersoll-Rand, and the workers’ representative, former United Mine Workers president John L. Lewis.

**POOR QUALITY**  
**ORIGINAL\_\_\_\_\_**

# Close-Up



Workers at South Strafford's Elizabeth Mine pose for a photographer in 1888. Below is a photograph of Isaac Tyson, who started a mining business in Strafford. Photograph courtesy Strafford Historical Society

## A Miner Of Some Renown

### Strafford's Isaac Tyson To Be Inducted Into National Mining Hall Of Fame

By DAN MACKIE  
Valley News Staff Writer

STRAFFORD — Before the gold rush, before the "go West, young man" tip sent America on a dash for its Holy Grail — quick fortune — men like Isaac Tyson Jr. made their mark in the East.

He made his fortune mining chromium, copper and other, less glittery stuff, in Maryland, Pennsylvania and the then-remote farm town of Strafford.

A village in Plymouth, Vt., where he established an iron works in 1837 and once manufactured Tyson cook stoves, bears his name.

Tomorrow, Tyson will acquire a specialized bit of fame, when he is inducted into the National Mining Hall of Fame. It's surely not as famous as the baseball shrine in Cooperstown, N.Y. (though certainly more significant than the Mountain Bike and

elevation) of Leadville, Colo., which describes itself as "the frontier West's wildest, richest silver-mining boom town."

"We're really kind of breaking ground because this (the mining hall) has been dominated by the West," said Johnny Johnsson, a mining engineer from Maryland who researches mining history as a hobby, and nominated Tyson to the hall.

Isaac Tyson, a Thomas Edison of mining who constantly tried new methods and projects, never lived in Vermont, though he stayed there for 15 months in 1833-34. The son of a wealthy flour merchant, he was born in Baltimore in 1792 and studied in France. Among his vocations, according to the biography that will go up at the hall of fame: geologist, mineralogist, assayer, mining engineer, metallurgist, industrial chemist, inventor, business manager, banker and economist.

After returning from France, he identified chromite deposits near Baltimore. He dominated world production of the mineral, used here and in Europe in manufacturing yellow paint pigments. After several failed ventures, according to Johnsson, Tyson built the Baltimore Chrome Works, said to be world-renowned and in operation for 140 years (in today's business world, time enough for one



family by Gwenda Smith, an authority on local history.

Traveling here from Baltimore was an ordeal in Tyson's day. His papers, some of which are stored in Vermont, tell of six-day journeys on ocean and river steamboats, and dusty stagecoaches. His wife and family came here just once. "Being a Baltimore woman, she didn't want to come back," said Richard Tyson Wilson of Strafford, a great-great grandson.

Tyson was a devout Quaker, according to Smith, and was troubled by the amount of





Mining



STATE OF VERMONT

AGENCY OF COMMERCE AND COMMUNITY DEVELOPMENT

June 19, 1997

Gwenda Smith, Historian-Curator  
Strafford Historical Society  
Strafford, Vermont 05072

DEPARTMENT  
OF HOUSING &  
COMMUNITY  
AFFAIRS

Divisions for:

- \* Community Development
- \* Housing
- \* Planning

Pavilion Building  
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05609-0501

Telephone:  
802-828-3211  
800-622-4553  
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802-828-2928

- \* Historic Preservation

135 State Street  
Drawer 33  
Montpelier, VT  
05633-1201

Telephone:  
802-828-3226  
Fax:  
802-828-3206

(Use this address,  
fax, and phone  
only for Historic  
Preservation)

Dear Gwenda,

With the adjournment of the Legislature, the Division for Historic Preservation has received formal approval for the erection of an official Roadside Historic Site Marker for Isaac Tyson.

Because the Strafford Historical Society proposed the marker, I am turning to you for help in gaining written permission to place the marker in the appropriate location, reviewing the text for the marker, and scheduling some sort of public event when you erect the marker. I'm unsure how soon the marker can be cast and delivered, but once you have received property owner permission and given final approval on the text, I will contact the casting firm in Ohio to make the marker.

Thanks for all your support and work at getting the marker to this stage. The text I now have is on the enclosed sheet. Make the necessary changes, let me know where we stand with owner permission and I will get the casting made.

Sincerely,  
DIVISION FOR HISTORIC PRESERVATION

John P. Dumville  
Historic Sites Operations Chief

enclosure

## Isaac Tyson

A short distance south of here, early metallurgical experiments were carried out on Furnace Flat beside the Ompompanoosuc River. In 1834, Isaac Tyson, Jr. of Baltimore, MD, invented a hot-blast system using ore from Copperas Hill and anthracite coal from Pennsylvania. With the assistance of others and financial support from the Binney and Reynolds families of Boston, Tyson may have been the first to use a heated blast for smelting copper in the U.S.

Vermont Division for Historic Preservation - 1997

(Proposed location: Strafford, copper mines)

*Finn*

# Vermont History News

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The Vermont Historical Society is a nonprofit, educational corporation founded in 1838 and dedicated to the collection, preservation, and display of those artifacts, books, and papers which tell the story of our state's history. It publishes VERMONT HISTORY, a scholarly journal, VERMONT HISTORY NEWS, books, a newsletter for local historical societies, and other materials; confers awards; operates the Vermont Museum in the Pavilion Building and the Kent Tavern Museum in Calais during the summer months; maintains a historical reference library; and carries on an educational program and other activities designed to enhance the knowledge of our state's history.

Annual membership fees are \$15 for active members and \$20 for family memberships, \$35 for participating members, \$100 for sustaining members, \$500 for life members, and \$25 and up for institutional members. Applications for membership should be addressed to Membership Secretary, Vermont Historical Society, Pavilion Building, Montpelier, Vt. 05602.

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## ON THE COVER

The old post office at Grafton when Miss Fannie Hall was postmistress (1898-1940). Assistants are her two cats, Peter and Meme. Photo from the Grafton Historical Society. In this issue, John C. Wriston, Jr. writes about post office locations in Vermont.

*Re: Copperas*

# Time's running out



## to make your contribution to the 1986 Annual Giving Campaign

Funds collected from the campaign support the VHS education program, serving elementary and secondary schools throughout the state, Junior Historian Clubs, and the thrice yearly publication of *The Green Mountaineer*, a children's magazine on Vermont history.

Please send your tax-deductible contribution today to:

Vermont Historical Society  
109 State Street  
Montpelier, VT 05602

## From the Director

Coo

Last September I was invited to speak at the annual meeting of the Shelburne Museum in Middlebury about cooperation. The trustees of that institution, having just completed work on their long range plans, were interested in devising a strategy for cooperating with other institutions like theirs. They asked for observations on the issue from the point of view of a state-wide organization and perhaps not coincidentally, from the point of view of a relative new-comer to Vermont.

I prepared that talk by reviewing the VHS long range plan, which also talks about cooperation, and thinking about my experiences traveling around the state meeting people in other museum, historical societies, libraries, and organizations interested in a similar set of issues. I began to realize that Vermont has a sizeable but in some ways fragile community devoted to historical study and historic preservation.

This community has several distinct overlapping constituencies. There are ninety-seven members of the Vermont League of Local Historical Societies and several more local societies that have not elected to join the League. The VHS has over 2,500 members, the largest of any of the New England state historical agencies. So far this year there are ninety-three Junior Historian Clubs around the state and a few more come into being each week during the autumn months. Vermont history is taught in every public school in the state beginning in grade five and continuing through secondary school; courses in Vermont history and folklife are taught on a regular basis in many of the state's institutions of higher education. Teachers and students thus form large constituencies of their own. The Vermont Museum and Galleries Alliance has about sixty individual and institutional members. Several Vermont organizations and institutions are

# Copperas – Humble But Useful

by Collamer M. Abbott

It's 1850. You live on a farm and the privy is getting a little ripe, you need to protect your corn from crows and insects, junior needs a spring tonic, may even have worms, your wife can't find ink to write a letter and she wants a black dress, the fence posts would last longer if they could be treated, the old barn should have a coat of paint this summer.

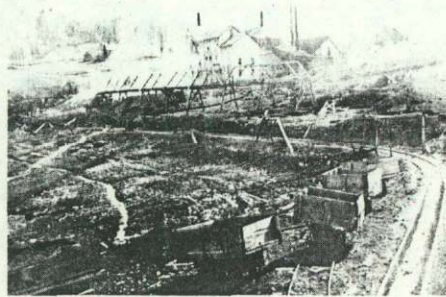
The solution to these everyday problems probably involved one important ingredient. With it you could treat the privy, the corn seed, junior and the fence posts, use it to make your wife's ink and black dress and the paint. The one ingredient was copperas, or ferrous sulphate, a salt of iron made from iron pyrites.

The source of the bright green crystals might well have been a mine in Strafford, Vermont, better known in the twentieth century for its copper, but in the nineteenth century touted in much of the technical literature as the major producer of copperas in the United States. Whether or not this is true, the Strafford mine in the nineteenth century produced at best estimates only ten million pounds of copper but a minimum of fifty million pounds of copperas.

Making copperas, as well as other astringents, such as alum, had been known for centuries, and until cheaper methods came along, iron pyrites were the major source. The process was described in Vannoccio Biringuccio's *Pirotechnia*, published in 1540, and in Georgius Agricola's *De re metallica*, published in 1556. The Strafford mine's importance in the history of the United States was first marked by the 1817 visit of President

James Monroe when domestic manufactures were taking on great importance as a consequence of the War of 1812. A Vermont law of 1809 had recognized its importance by exempting workers at copperas plants from attending days of training and regimental review of the state militia.

The Strafford mine was supposedly discovered in 1793 by two men tapping maple trees on the slope of a ridge in the southeastern corner of the town. Although they at first believed the outcrop would produce iron, nothing was apparently done until about 1809 when other men tried to smelt some of the ore in the new iron furnace sixty miles away at Franconia, New Hampshire. The ore, rich in sulphur, blocked the furnace. From that time, all talk was of copperas until about 1827 when the owners began to experiment with the extraction of the copper in the ore, the presence of which had been noted as early as 1819 or 1820. Copper was then produced in sporadic experiments until World War II. In 1943 the mine was reopened for a fifteen-year run of copper production and the sulphur-iron content was again utilized from 1952-1958, this time to make sulphur dioxide for a paper mill.



South Strafford copper mine, 1905. VHS photo.

*Collamer M. Abbott has done extensive research on copper mining in Vermont. He is a frequent contributor to VHS publications.*

At least one Boston man, Joseph Reynolds Newell, was among the original Strafford prospectors and exploiters. He was also interested in the New Hampshire iron industry, and who organized several companies to work deposits in Strafford, Thetford, Sharon, North Ferrisburgh, and Hartford, Vermont, for iron, via copperas and other mineral products. Very quickly in the period before, during, and after the War of 1812, Boston investors dominated the development of the Strafford deposit and the Vermont Mineral Factory Company, formed in 1809 to consolidate the properties.

Another man, Colonel Amos Binney, a commission agent of the U.S. Navy Yard in Charlestown, Mass., from 1812 to 1817, and his son, Dr. Amos Binney, became the key figures in the copperas enterprise. The Boston commission agent William Reynolds handled distribution of the copperas and for decades other members of the Reynolds family were active in copperas and copper production. Colonel Binney, a merchant, commission agent, and part owner of ships on Long Wharf in Boston, was active until his death in 1833, and his son, educated for a medical career at Harvard, Dartmouth, and Brown, entered the business world. His father, devoted his talents to developing the copper and on the side pursued his hobby of conchology.

The younger Binney's active collaborator in the Vermont Mineral Factory Co. was a pioneer metallurgist, industrial chemist, inventor and producer of copperas, Isaac Tyson, a devout Baltimore Quaker, who invented a device for heating the blast to smelt copper and an improved process for making copperas, both of which he experimented with at Strafford.

All this activity added up to claim various authorities that Strafford, Vermont, was the principal source of copperas. An 1832 report by Colonel Binney estimated that the Strafford mine combined with another controlled by the Binneys in Shrewsbury, Vermont, produced three-fourths of the copperas in the United States. Zadock Thompson's

At least one Boston man, Joseph Reynolds Newell, was among the original Strafford prospectors and exploiters who were also interested in the New Hampshire iron industry, and who organized several companies to work deposits in Strafford, Thetford, Sharon, Norwich and Hartford, Vermont, for iron, vitriol, copperas and other mineral products. Very quickly in the period before, during and after the War of 1812, Boston investors dominated the development of the Strafford deposit and the Vermont Mineral Factory Company, formed in 1809 to consolidate the properties.

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The younger Binney's active collaborator in the Vermont Mineral Factory Co. was a pioneer metallurgist, industrial chemist, inventor and producer of chromite, Isaac Tyson, a devout Baltimore Quaker, who invented a device for heating the blast to smelt copper and iron and an improved process for making copperas, both of which he experimented with at Strafford.

All this activity added up to claims by various authorities that Strafford, Vermont, was the principal source of copperas. An 1832 report by Colonel Binney estimated that the Strafford mine combined with another controlled by the same men in Shrewsbury, Vermont, produced three-fourths of the copperas in the United States. Zadock Thompson's 1842

*History of Vermont* claimed the facilities were "perhaps unsurpassed in the world." *The American Cyclopaedia* noted that Strafford produced "large quantities." Benjamin Silliman, Jr., in *First Principles of Chemistry* said "immense quantities" were produced. And John Leander Bishop, in his *History of American Manufactures* wrote that Strafford was the major source east of the "Alleghanies" for many years.

While all this may seem exaggerated now, it suggests that the Strafford copperas plant was considered an important source of a very basic chemical in the nineteenth century. One event which seems to clinch the early claims was that visit of President Monroe at the urging of Colonel Binney, especially since the president had to extend his trip ten miles beyond the planned northern limit at Norwich in order to make a tour of the factory and mine.

All this was part of a campaign to establish the business more solidly by petitioning Congress for a protective tariff to combat the flood of British copperas. A duty of two cents a pound on foreign copperas in 1824 gave a boost to the copperas industry so that the same men began making copperas under the name of the Green Mountain Manufacturing Co., from the mine in Shrewsbury on the western side of the mountains. This product was shipped by wagon to the Champlain Canal and down the Hudson River. When the panic of 1836 put a damper on all industry the largely experimental production of copper in remote Strafford stopped, but the Vermont Mineral Factory Co. and the Green Mountain Manufacturing Co. merged in the Vermont Copperas Co. and went on producing, at conservative estimates, between one and two million pounds of copperas a year into the 1870s. In the 1860s active efforts were made to produce paint by calcining the copperas to make the pigment called venetian red. Some sulphuric acid was produced from the ores in a plant near Boston by one company in the late 1860s.

Company names changed as different

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VHS photo.

men tried to exploit both the copper and the copperas. The Strafford Mining Co., the New England Chemical Co., and the New England Chemical Manufacturing Co. tried their hands at producing the various products, with more or less success. Finally, by the 1880s, after fighting cheaper imports and cheaper methods of copperas manufacture, copper became the major product as descendants of Isaac Tyson, who inherited his penchant for experimentation, developed the ore body north of the old copperas works and began experimenting with new methods of copper smelting.

Although we don't hear much about it today, copperas was perhaps more important for daily, practical use by country dwellers than copper in the nineteenth century, and, although it required a certain skill, it was easier to produce from the sulphide ores than copper.

The business required roast beds, evaporators, vats for boiling and crystallizing, a cooperage, company and local farmers' teams and wagons for shipping and a small settlement with several dwellings, a boarding house, school, office and eventually a post office, known as Copperas Hill, established in 1853 and closed in 1857, then reactivated from 1858 to 1898. When the railroad was pushed up the Connecticut River valley in the 1850s, a station was established at Pompanoosuc for shipment to Boston, New Haven and New York.

The process did not vary basically from that described by Agricola in the sixteenth century. The ore was blasted and wedged from an open pit, broken into egg-sized pieces and piled in symmetrical heaps on the hillside below the mine where the roasting process was started with wood. Then the ore was left to burn while the roasting was controlled by pouring water onto the piles.

This operation took place over a period of months and was carried on mostly during the warmer weather of late spring, summer and early fall. The solution of sulphur and iron leached from the piles of ore was directed into evaporators where the liquid became more concen-

trated. After that it was boiled like maple sap until it reached a certain concentration and was run over tree branches or finger-like rods in the factory, allowing the concentrated liquor to form bright green crystals, which were packed in hogsheads of 500 or 1000 pounds. In the early days it was shipped by wagon down the Strafford turnpike to Norwich, across the Connecticut to the Fourth New Hampshire turnpike and then to Boston. Some could be shipped down the Connecticut or part way on the Merrimack River in New Hampshire to the Middlesex Canal and Boston. From Boston, the Reynolds commission merchants shipped to distributors in Atlantic and Gulf ports.

How widely it was sold is suggested by the records of the late 1830s when the Strafford and Shrewsbury companies were merged in the Vermont Copperas Co. At that time there were large stocks on hand at Hartford, Conn., Boston, Baltimore, Whitehall and Troy, New York, New York City, Richmond, Virginia, and Charleston, South Carolina, solid evidence of the extent of the market for Vermont copperas at that time.

The number of workers varied and might be as few as two in the winter or as many as sixty-six at the height of the manufacturing season, but the number usually ranged between thirty and forty-five. Keeping the workers sober was always a problem. Company officials, the local minister and temperance groups promoted sobriety, but vendors of the critter did not. Providing nearby lodging and board in such a secluded location was a concern of the company from the early days when Benjamin Preston, a local farmer, agreed in 1827 to board workmen and visitors for \$1.25 a week, which compensation included the mending of the miners' clothes. Later records show that the company rented houses to some miners' families and deducted rent of \$2.00 per month from their pay.

Keeping the miners at work was also a problem. "Circus Day" took its toll in absentees, and holidays like the Fourth of July were celebrated with such enthusiasm that the following day was apt

to be a total loss. During season the mine was sure to hands because miners were time farmers. Injuries from took their toll also as John Reynolds in April of 1863 was a rather unfortunate day was killed by a stone from one of the men had an eye Isaac Tyson's day he had the calling on the newly-created James Richards "who was premature explosion of a blast accidents were fairly frequent attention was paid to safety Men took up the dangerous ing at their own risk.

Why all this toil and traffic so obscure today? Privies were in 1850. Copperas was used

#### "Sleeping Lucy"

Lucy Ainsworth Cooke Calais, Vermont, in 1819 and 1895. Because of her extraor as a clairvoyant or mesmer she was known popularly "Sleeping Lucy." In her long profession claimed to have treated 200,000 patients. During h sessions she went into a me like a trance or hypnotic st most likely by her husband Cooke, or her brother, I worth. In this condition, L powers were opened and an she diagnosed diseases and medicinal remedies, none remembered when she awol probably associated with t perhaps in Enfield, New making use of their exper pounding and packaging the herbal remedies she requir

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to be a total loss. During the haying season the mine was sure to be short of hands because miners were often part-time farmers. Injuries from accidents took their toll also as John Reynolds reported in a letter to William B. Reynolds in April of 1863: "Yesterday was a rather unfortunate day for us, an ox was killed by a stone from a blast and one of the men had an eye put out." In Isaac Tyson's day he had the sad duty of calling on the newly-created widow of James Richards "who was killed by the premature explosion of a blast." Such accidents were fairly frequent and little attention was paid to safety precautions. Men took up the dangerous work of mining at their own risk.

Why all this toil and traffic in a product so obscure today? Privies were ubiquitous in 1850. Copperas was used to disinfect

them and to suppress odors, as well as to prepare "night soil" for use as a fertilizer. With its drying and astringent properties, copperas was used to make ink and as a mordant in black dyes. An infusion of copperas provided a tonic and worm medicine. Farmers advised soaking seeds in a copperas solution to discourage wire worms and crows from attacking the seeds. Copperas was also recommended as a top-dressing for cropland. It helped preserve wood and when calcined was the principal ingredient in the pigment so widely used that "barn" red and "kitchen table" red became vernacular terms. Finely ground, the calcined product was made into jeweller's rouge or colcothar for polishing lenses.

In 1850, you could buy this humble-useful product in almost every village store.

## Research Query

### "Sleeping Lucy"

Lucy Ainsworth Cooke was born in Calais, Vermont, in 1819 and lived until 1895. Because of her extraordinary gifts as a clairvoyant or mesmeric physician, she was known popularly as "Sleeping Lucy." In her long professional career she claimed to have treated more than 200,000 patients. During her treatment sessions she went into a mesmeric sleep like a trance or hypnotic state, induced most likely by her husband, Charles R. Cooke, or her brother, Luther Ainsworth. In this condition, Lucy's psychic powers were opened and amplified, and she diagnosed diseases and prescribed medicinal remedies, none of which she remembered when she awoke. Lucy was probably associated with the Shakers, perhaps in Enfield, New Hampshire, making use of their expertise in compounding and packaging the hundreds of herbal remedies she required.

Despite Lucy's enormous popularity during her life time as a mesmeric physician, as a psychic who was able to "see"

lost objects, and as a healer in the "laying on of hands" tradition, very little actual data is available about her. In the early 1970s McDonald Newkirk researched her life and work and wrote a short informative pamphlet about her entitled *Sleeping Lucy* (1973). However, other people doubtless know about Sleeping Lucy through anecdotes or have in their possession bottles or packages from her many remedies.

Eleanor Ott, an anthropologist and folklorist residing in Calais, wants to pick up the trail of Sleeping Lucy and continue the research begun over a decade ago on the life of this amazing but enigmatic woman who was once called "the greatest medical clairvoyant of the nineteenth century." Ott is eager to gather whatever firsthand or indirect information and artifacts remain about her. Anyone interested in providing information about Sleeping Lucy may contact Ms. Ott at Calais, VT 05648 or by telephone at 802/223-5939.