Forestry Special

OUT OF OUR WOODS 2 Stephen Greene
TREES FOR TOMORROW TOO 15 Ronald Rood, on the Ward Lumber company
WHICH TREES? 18 Aubrey Janion. Test your tree bark I.Q.
COLOR OF THE FORESTS 20 Photographs in the Fall

Scenic Section

VERMONT AUTUMN 34 Donald Sultner-Welles, with Carl Carmer

Industry

FORESIGHT IN STEEL 45 Elizabeth Kirkness

People

BOY AUCTIONEER 54 Joyce Wilson

Nature

BAT CAVES 26 Harold B. Hitchcock. He seeks them out
WOODLAND’S BEATING HEART 42 Ronald Rood, on the Ruffed Grouse

The Past

JOURNEY TO INNOCENCE 49 George Haig, a Middletown Springs boyhood

Departments

V-L REPORTS 56 on a musical revolution in Bennington
MYSTERY PICTURE 61 Number 23
FOOD 58 on roasting partridge
COMING ATTRACTIONS 60 A checklist of Autumn events
GREEN MOUNTAIN POST-BOY 61 Notes on the passing scene

Covers: Front—Near Paulet, Winston Pote; Inside—Lumberjack Round-Up, Lake Dunmore, Harvey Dodd; Back—Factory Brook, Barnet, David Witham


F. Ray Keyser, Governor
Published quarterly at Montpelier, VT, by the Vermont Development Department. Board: Roland Q. Seward, Carl A. Parker, Richard H. Wadhams, Glendon B. Orne, Sepp Ruschp. Commissioner: Roland R. Vautour. Per Copy—50¢; Per yr.—$2, ($3.50 for 2 yrs.; $5 for 3 yrs.) Foreign—40¢ additional per yr.

© Copyright 1962 by Vermont Life Magazine. Second class postage paid at Montpelier, Vermont and additional mailing offices. Published August 21, 1962
Out of Our Woods

VERMONTERS HAVE LEARNED THE HARD WAY THAT IT TAKES PEOPLE PLUS TREES TO MAKE TOMORROW'S FOREST

STEPHEN GREENE

Trees have always been the most vital, except for water, of Vermont's natural resources. Trees have now fed and protected, sheltered and supported Vermonters for more than two centuries—and have found the haphazard hand of man, during this period, a good deal harder to weather than the natural storms.

But the picture is changing. Today a new understanding and knowledge of forests, a wider concept of their value, gives them an importance undreamed of even a generation ago. In fact, this is a time of higher excitement in the history of the forests. It may well be that, not only to the forester but also to the landowner and the public at large, this is the Era of the Tree.

Past to present, the history of Vermont's forests might be summed up in the chronicle of 25,000 acres or so of a single town in Windham County. Stratton, in the south-central Green Mountains, was a blanket of trees when young men moved up from Massachusetts in the 1780s to clear the hillsides for farms. More families followed until, when Daniel Webster made a stump speech there in 1840 for "Tippecanoe" Harrison, he was able to gather an audience of several thousand people—an audience presumably made up in large part of local farmers.

Today the farms are gone and most of the area reached by Webster's voice over a century ago is again in trees. Stratton, in the south-central Green Mountains, was a blanket of trees when young men moved up from Massachusetts in the 1780s to clear the hillsides for farms. More families followed until, when Daniel Webster made a stump speech there in 1840 for "Tippecanoe" Harrison, he was able to gather an audience of several thousand people—an audience presumably made up in large part of local farmers.

Today the farms are gone and most of the area reached by Webster's voice over a century ago is again in trees. But on the nearby slopes of Stratton Mountain the woods are being opened up again, this time in access roads and well-mulched trails, by the Stratton Corporation, a two-year-old ski company.

As with Stratton Town over the past two centuries, so it has been with land elsewhere in Vermont. Samuel Williams, first state historian, in 1794 wrote of 250-foot pine trees 6 feet in diameter. Such ancient growth was hacked, burned over and in general got rid of by the farmer, who needed sunlight for his crops and pearl- and potash to sell for cash. What trees he missed were largely gobbled up by the lumbermen who followed him, the tough and hairy loggers described with affection by Stewart Holbrook—characters who felled the big pines and maples for fourteen hours a day and on Sundays sharpened their axes, shaved, played cards and read the Police Gazette.

No worries of sustained yield furrowed the brows of the hard-pressed pioneer or of such later celebrities of the woods as Jigger Jones, a head chopper who was wont, in his youth, to walk a felled spruce barefoot and kick off every knot from butt to top. These men, whom it is all too easy to blame a century later, were earning a living letting daylight into the swamp: the forests seemed inexhaustible and the poet who called on the woodsman to spare that tree was indeed a voice in the wilderness.

The big pines, the ones handy by, went out first. The advent of the railroads a century ago created a market for crossties and for fuel wood, burned at a rate of more than a half-million cords yearly. Charcoal kilns, brick yards, plank-based toll roads and shunpikes (the alternative routes built to avoid toll roads) took millions more.

Many of the logs, and later much of the pulpwod, came out by water, early in the state's history rafted up Lake Champlain to Canada, and later sent south to Albany through the new barge canal. So great was the traffic that around 1880 Burlington, then a milling center, was the third most important wholesale lumber market in the United States. But it was the Connecticut River drives which were at one time possibly the largest in the country. It was better than a circus to watch the nimble men who kept the logs moving toward the Massachusetts mills, and who took appalling risks to unscramble the jams.

Pine plantation at Billings Farm, West Woodstock—David Witham
Then toward the beginning of the 1900s loggers went up into the hills to cut, for the New York market, the hitherto largely untouched stands of spruce, using the awkward but husky steam tractor and the narrow-gauge railway to help get out the timber.

When early pioneer and lumberman had done their worst they moved along to the un ravished forests of the West, leaving behind a state less than 40 percent in forest cover.

"Nowhere in North America," one observer has written, "not even in the tobacco and cotton lands of the South, were forests removed and soils exhausted faster than on the flanks of the Green Mountains."

The trees today are coming back. Ride in a plane over Essex County, or Bennington or Windham: below stretches an apparently limitless blanket of green. The state is close to 70 percent in forest cover today: it will be at least 75 percent, we are told, in another twenty years.

And perhaps history has taught us something. True, the maple, pine, spruce, hemlock, beech, red oak and yellow birch will keep on growing, for forests, unlike most other resources, are renewable. But trees, like cattle and corn—and people, for that matter—must be handled intelligently, with due regard for the future. It is not possible to continue indefinitely, with each successive cut, to remove the best-quality trees and leave the poorest and often unmerchantable trees, without paying the price: the result is a forest of culls—of little or no value to anyone.

In a fast-changing world, everything has changed in the forest except the trees. They come a little smaller and more crooked today, but they are still one of Vermont's basic natural resources, one whose importance has never been greater than it is today.

Income from Vermont's 4,000,000 acres of woodland, processed and partly processed, aggregated at last count $118 million, equaling or exceeding the income from agriculture and close to that derived from recreation. Forest-based industry—from logger to wood-using factory—employs more workers than any other single industry in the state, providing full-time jobs for more than 10,000 people with payrolls amounting to more than $31 million. Local tax revenues from woodlands, a conservative $1,500,000 a year, play a vital role in town economy, paying for a good share of our schools, roads and other town responsibilities.

The harvesting of wood in this state falls into two principal categories: 1) lumber—whose end products include everything from bird-call whistles to flooring—which is fashioned from the log by a sawmill; and 2) pulpwod, which, when broken down chemically or mechanically at a pulpmill, makes versatile cellulose fibers (for papers such as the one you are now holding, plastics of many kinds, foods, etc.) as well as the still-rather-mysterious binding material known as lignin.

Yet the most important of these products, the one accounting for two thirds of today's annual timber crop in Vermont, remains lumber—which has been listed among the state's top industries since the earliest days.

Great changes have been made in the working conditions and equipment of the men who produce the lumber. The logger in 1962 lives in a house with windows as you and I do, drives to work in a not-so-old car and observes the forty-hour week. The crosscut and buck saws have given way to the power saw; crawlers outnumber horses in the woods, and the really modern sawmill is strictly push-button.

The state has fewer lumber mills now than in the past, but they are bigger and more efficient, and for the most part handle more species of wood than their old counterparts used to. For instance at his mill in Vernon, Victor Morse now produces routinely some eighty different "sorts"—combinations of grades, sizes and species—from the seventeen different varieties of logs he buys.

Mill equipment is being increasingly mechanized in Vermont in order to keep the cost of lumber down to a competitive level, and there are at least five push-button sawmills now. One of them, the Green Mountain Box and Lumber Company of White River Junction, uses a Ger-

---

**NOTABLE CONSERVATIONISTS**

A practical scholar whose career spanned the nineteenth century, George Perkins Marsh of Woodstock attended Dartmouth College, practiced law in Burlington, was selectman, farmer and manufacturer on the side—and at the same time wrote the first Icelandic grammar in English. He served as Congressman in Washington (where he helped found the Smithsonian Institution), was Minister to Turkey and Italy, and held a wide variety of key state jobs in Vermont.

While in Italy Marsh completed *Man in Nature*, a pioneering work on geography, the first to recognize fully man's influence on culture and close to that derived from recreation.

A passionate lover of his state and a man of action, Battell pleaded with the legislature to preserve Vermont's woodlands, started buying up mountaintops and other unspoiled countryside. At one time he owned 40,000 acres, and left most of it to Middlebury College and to the state. Detesting automobiles as much as he loved scenery and horses, Battell turned away guests who arrived by car at his Bread Loaf Inn.
can still be fed by old-time muscle
"To rule the mountains is to rule the water," according to the Chinese proverb—for the floor of the well-managed forest inhibits floods, soaks up water like a sponge, protects the soil from erosion and filters clear water into lakes and streams. Trees such as those to the left delay the melting of the snow, prolong the period of runoff. Water yield on some watersheds may increase 30 percent through proper forest management.

The woods are also vital for the existence of abundant wildlife, not only game but every
form of living organism, each of which plays a part in the natural scheme. Wildlife generally prefers the forest edge, the cleared areas created by good cutting practices, to the deep woods.

A growing function of our woods today is to provide places of recreation for an ever-growing population with more time for leisure. Forests shelter the game for hunters and fishermen, provide trails to hike on and scenery to look at, sites for campers and picnickers. Man has always found beauty, solitude and inspiration in the forests.
MANUFACTURING COMPANY of North Bennington and the Baumr-ritter Company with headquarters at Beecher Falls, are integrated operations which turn yellow birch lumber into reproduction furniture sold throughout the United States.

While Vermont softwoods face increasingly stiff competition from the well-machined and dried pines, spruces and Douglas fir of the South and West, our own hardwood birches, maples, and beech are growing in popularity. These trends are in a healthy direction from the standpoint of supply: in the past we have cut softwoods at a faster rate than they have been growing, while growth of our hardwoods has regularly exceeded the cut.

More pulp is also being made out of our hardwoods. For generations after the exuberant Matthew Lyon built at Fair Haven the first papermill in the state, such plants would accept only softwood for pulp, and that in the familiar 4-foot bolts. Now a number of mills, to take advantage of the plentiful supply, have converted to hardwood, and moreover are buying much of it in the form of

MECHANIZED PLANTING

In the streamlined method of transplanting nursery-grown stock to relatively smooth and rockless terrain like this, a tractor-drawn plow cuts a furrow, the second forester helps the planter to set the seedlings, the V-wheels under press the soil back in place around them. The former Soil Bank program prompted a radical increase in tree planting on old mowing pasture lands in the state.

Space-age products

BUT

they still come from trees

man-made slash gang mill in which the log goes in one end and a variety of the desired boards comes out the other. Anthony Cersosimo of Vernon puts his pallet stock together with a gang nailer. There is also a growing number of the latest thing in drykilns in the state. One such in Brattleboro recently imported a load of green lumber from Japan, dried it to a specific dryness, and shipped it back across the Pacific again.

In sawmills there is an increasing tendency to use more and more of the log. Bandsaws, which are thinner and therefore waste less wood than the familiar circular saws, are replacing the latter in our mills. And edgings and slabs, formerly a disposal problem, are now being pulverized to make wood flour. In Brattleboro the C. F. Church division of American-Standard makes toilet seats and school-desk parts out of a mix of this flour and resin, with a resulting product in some ways stronger than natural wood and with a big price advantage over other plastics.

Most Vermont hardwoods eventually find their way into furniture. Half the lumber produced in Vermont is shipped out of state, and a considerable share of it goes to the furniture industry around Gardner, Massachusetts, usually in the form of dimension stock from which chair seats, table legs and the like are fashioned. But two of Vermont's largest wood users, the H. T. Cushman Manufacturing Company of North Bennington and the Baumr-ritter Company with headquarters at Beecher Falls, are integrated operations which turn yellow birch lumber into reproduction furniture sold throughout the United States.

While Vermont softwoods face increasingly stiff competition from the well-machined and dried pines, spruces and Douglas fir of the South and West, our own hardwood birches, maples, and beech are growing in popularity. These trends are in a healthy direction from the standpoint of supply: in the past we have cut softwoods at a faster rate than they have been growing, while growth of our hardwoods has regularly exceeded the cut.

More pulp is also being made out of our hardwoods. For generations after the exuberant Matthew Lyon built at Fair Haven the first papermill in the state, such plants would accept only softwood for pulp, and that in the familiar 4-foot bolts. Now a number of mills, to take advantage of the plentiful supply, have converted to hardwood, and moreover are buying much of it in the form of

8 • Vermont Life
wood chips. If the bark (which pulpmills cannot handle) is removed from logs before they are sawed out, the formerly wasted scrapwood can then be fed into a chipping machine and the resulting product sold to the pulpmills. John Eaton of Hancock, an influence in this growing chipwood business, some years ago devised one of the first machines to make debarking a practical matter for small mills. Now seventeen plants in the state are equipped with debarkers, and the sizable Ticonderoga plant of the International Paper Company buys 40 percent of its raw material in the form of wood chips.

The products of our saw- and pulpmills are almost infinite and the list given on Page 18 is only a sampling of the whole. Nor have these newfangled products entirely superseded the older-time results of Yankee ingenuity. Yesterday’s butter tubs are no longer being made, but we still have a ready supply of dowels, salad bowls, bobbins and a host of novelties. Fuel wood, veneer, cedar fence posts and maple sugar and syrup are still important to the state’s forest economy, and Christmas greens and trees (a million of the latter were exported last year) enjoy a growing market.

It is these economic aspects of woodlands that are the chief concern today of the forester, the rather youthful specialist (even as specialists go today) who is trained to grow a healthy and productive forest. Some foresters say that the best forester is Nature herself; others say that it is Economics. There is reason in both definitions, because Nature, in spite of two centuries of notably poor cutting in Vermont, manages today to produce more fiber wood than is being cut; and the law of supply and demand is furnishing a continuing market for the trees that reach merchantable size.

But Nature operates too slowly for the market place: the forester is needed to help her along. He does so by directing the cutting of trees whose removal will encourage greater growth among those remaining; by planting the right trees on the right soil; by pruning young trees and by thinning young stands, and by removing crooked and sick or otherwise inferior trees. All these practices, in experienced hands, are demonstrably effective—so much so that, among the initiated, to cut a woodlot today without a forester’s supervision is equivalent to having an appendix out without benefit of a doctor: you don’t do it if you can help it.

The Vermont Department of Forests and Parks, the center of forest activity here, employs about one quarter of the state’s one hundred practicing foresters, and exemplifies to some extent the present broadening of the concept of forestry, for years largely limited to silviculture, i.e., the proper growing and harvesting of trees. For not only are there experts in woods management in the Department today: there are also park specialists, geneticists, landscapists, experts in pest and fire control, and architects. Also, the Department is constantly working with other state units on such diverse headaches as the size of the deer herd, the prevalence of porcupines, aerial photomapping and watershed management.

Under the direction of Perry Merrill, an imaginative and politically shrewd leader, and a group of able colleagues, the Department has been well ahead of its day in many of these broader aspects of forestry—notably in the

### FORESTLAND OWNERSHIP IN VERMONT • 1961

<table>
<thead>
<tr>
<th>Public</th>
<th>Number of Owners</th>
<th>Acres</th>
<th>Percent of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Forest</td>
<td>1</td>
<td>232,000</td>
<td>5.6</td>
</tr>
<tr>
<td>Other federal</td>
<td>3</td>
<td>15,000</td>
<td>0.4</td>
</tr>
<tr>
<td>State</td>
<td>1</td>
<td>91,000</td>
<td>2.2</td>
</tr>
<tr>
<td>Town, city, county, etc.</td>
<td>98</td>
<td>34,000</td>
<td>0.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>103</strong></td>
<td><strong>372,000</strong></td>
<td><strong>9.0</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Private</th>
<th>Number of Owners</th>
<th>Acres</th>
<th>Percent of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 100 acres</td>
<td>29,000</td>
<td>140,000</td>
<td>3.4</td>
</tr>
<tr>
<td>100-500 acres</td>
<td>10,000</td>
<td>2,723,000</td>
<td>66.0</td>
</tr>
<tr>
<td>500-5,000 acres</td>
<td>70</td>
<td>140,000</td>
<td>3.4</td>
</tr>
<tr>
<td>5,000-25,000 acres</td>
<td>22</td>
<td>250,000</td>
<td>6.0</td>
</tr>
<tr>
<td>Over 25,000 acres</td>
<td>10</td>
<td>500,000</td>
<td>12.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>39,192</strong></td>
<td><strong>4,125,000</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Autumn 1962 • 9
Piecemeal over the past fifty years and increasingly rapidly over the past ten, the Department has acquired some 91,000 acres which now make up more than fifty state forests and parks. Simply but attractively developed as money has become available, this park system—including lakes, mountains, trails, many camping sites and picnic grounds—has gone a long way toward meeting the recreational needs of Vermont, and indeed has been the envy of some of our wealthier neighboring commonwealths.

In education, too, the Department has taken the lead, for it has long felt that guidance, rather than regulation, is the method to insure progress. Today its efforts, along with those of the federal government, various forestry groups, the forester fraternity generally, industry, conservationists and other interested individuals, are directed toward putting across to the public two concepts, long known to some but difficult of accomplishment on a wide scale. These are:

1) That the trees, in addition to producing wood for man's use, have other often equally (and perhaps sometimes more) important functions, namely as guardians of the soil and water, as wildlife habitats and as recreational areas. This is the multiple-use principle, which holds that our woodland, like the family living room, can be used successfully by different people for different purposes at more or less the same time.

2) That trees are a crop, like tobacco and corn, and deserve the same attention. A typical acre of Vermont woodland now grows less than 100 board feet of timber a year. But some properly managed forests where soil and other conditions are highly favorable have been made to grow at ten times this rate. Merely to double present growth throughout the state is both within our capacity and is of staggering potential benefit in terms of state income and employment.

Neither of these concepts is in any way new. In Guilford, Connecticut, in 1730, a charcoal kiln was being stoked with logs from large trees only, "the small growth being left for succeeding crops." In 1847 a distinguished citizen of Vermont, George Perkins Marsh, drew attention to the deplorable state of our woods and called for a detailed study of woodland use. Fifty years later leading out-of-state conservationists such as J. W. Touney and Gifford Pinchot were still telling Vermont audiences much the same thing. We should wake up to what was happening in our woods, they said, and do something about it.

Today the various public forests—federal, state and community—are for the most part being cut in such a way that future cuts will yield a greater harvest of higher quality. And likewise the industrial owners, who are hiring foresters in growing numbers, are treating their trees with respect. As this is being written, the largest landowner in the state, the St. Regis Paper Company, and the Ward Lumber Company are both setting up forest inventory programs designed to make possible a steady and beneficial cut in perpetuity.

So the problem does not lie with the public or industrial owners. Reference to the chart on forestland ownership in Vermont (Page 9) will show that more than two thirds of the state's wooded acreage is owned by some 40,000 private landowners with holdings of less than 500 acres each.

It is in the small private holding that the lack of good forestry management is most apparent, conservationists and economists say. Here is where emphasis must be given the idea that trees need growing room, sun and water, and if they get them they will double and triple in rate of growth. Here must be fostered the idea that although planting trees is a good thing, improving the ones already there is a better one. Landowners must learn that badly designed logging roads are a prime cause
of erosion and former city folk must learn to regard a 100-acre woodlot not merely as pretty real estate, but as a natural laboratory, complex and full of fascinations and possibilities.

To encourage the small holder there is a heartening, even bewildering, variety of groups and individuals working on virtually every aspect of forest education. In addition to the Department of Forests and Parks, there are the forestry courses offered in the state's colleges and the University. There is also the wood-using industry itself, which, through its Tree Farms, gives public recognition to outstanding examples of good woodland management. Associations of landowners—such as the Vermont Timberland Owners, the New Hampshire-Vermont Christmas Tree Growers, the Vermont Maple Sugar Makers and the Southern Vermont Forest Association—stimulate an appetite for good, workable forestry practices. The Vermont chapter of The Nature Conservancy is devoted to preserving small areas of wildland in their natural state for scientific and other purposes. Such individuals as

---

**WHY USE A FORESTER?**

A farmer was recently approached by a logging contractor to sell the trees on his 30-acre woodlot for $1,500. He asked the advice of a forester. The forester examined the lot and recommended that it be marked for a selection cutting: i.e., for cutting just those mature and weak trees whose removal would encourage the remaining ones to grow faster. The forester explained that although the farmer's immediate income might be less, he would benefit in the long run.

The decision was a tough one because the farmer had a mortgage on the place. But he decided to take the forester's advice about selection cutting and marketing. A buyer for the marked lot was found who agreed to pay $20 per thousand board feet for the trees selected.

After the cutting the farmer found his checks added up to $1,660. The forester estimated, moreover, that as a result of this careful harvest, the farmer could sell off another 60,000 board feet ($1,200 at the same unit price) in ten years or so, and still have a fast-growing young stand coming along in replacement.

This is an actual case.

Why use a forester?

---

Riley Bostwick of Rochester (V L, Winter 1958–9) and Richard Brett of East Barnard are showing what can be done with woods that are intelligently managed.

The federal government is of course very much in the act, too. Through its Agricultural Conservation Program it has assumed for some years a generous share of landowner costs for tree planting and woodland improvement.

Another fine influence for the future here, although of less present-day consequence, has been the increase in community forests. With strong state backing, some ninety-eight municipalities in the past fifty years have been acquiring cutover and abused lands and, with the good management and continuity of ownership that a town can provide, have been nursing their town woodlands into renewed productivity. Such communities as Essex Junction, Montpelier, Brattleboro and Rutland, all of which made an early start in the program, can view their forest properties today with considerable pride.

For these town forests and others in the state are not only a potential source of labor employment (particularly in Winter) and an attraction to wood-using industries interested in a perpetual source of raw material, a protection to watersheds, a laboratory for schoolchildren and sites for recreation: they also provide the tempting prospect of a radical change in the local tax structure. Some towns in Europe, where intensive woods management has been practiced for centuries, are substantially supported by their community-owned forests and levy few
MULTIPLE-USE FOREST

Nothing in Vermont is quite as it is elsewhere. So it is with the Green Mountain National Forest.

When federal land agents for the 154 other national forests in America want to add a piece of land within their “acquisition area,” they merely have to agree on a price with a willing vendor and get a go-ahead from a local authority. Here, uniquely, though in the national forest system, the seller must get permission both from a state board and from the local selectmen before the sale can go through. The Vermont legislature, in okaying the Forest in ’25, set it up that way.

Vermont's largest public landowner, the Green Mountain National Forest, is a comparative newcomer here, having started to acquire land a mere thirty years ago. It now encompasses 231,900 acres, whose rate of growth is around 24 million board feet a year, most of it in good, tree-growing country.

Last year the Forest yielded 8 million board feet of timber, thus helping wood-using industries in the area and returning some $45,700 (25 percent of the total stumpage sales) to the towns concerned, in lieu of taxes. However, National Forest trees are always cut under the educated eye of a forester so that the cutting will not only contribute to a larger timber crop in future years, but will also encourage wildlife, protect vital watersheds and not deplete the soil. In addition, hunters, fishermen, picnickers, campers and hikers are all welcomed. Both the Long Trail and three of the state's ski areas use National Forest land in part.

All this is in accord with the management principle of multiple use which functions something like the family living room: several activities may take place there at more or less the same time, each so adjusted that it does not seriously interfere with the others.

This adjusting, in the case of our own National Forest, is supervised by a staff of thirty persons (including ten foresters) from an office in Rutland. Readers wanting further information can get it by addressing Paul Newcomb, the Forest Supervisor, there.

if any taxes. No one, needless to say, is going to make a Vermont community of 1962 any such guarantee. But the prospect appeals.

The municipal forest augurs good things for the future but the County Forester system is an example of steady present-day accomplishment. A sort of woodlands counterpart of the county agricultural agent, the county forester draws a bead on the small woodland owner, the problem-child in woods management today. The forester advises him on improvement work and cutting, helps with timber-sale contracts, locates timber for wood-using industries, writes and speaks to Granges, schools and other groups, and walks the woods with countless individuals who would like to improve their woods but don't know how to go about it.

The idea of county foresters seems to have been first proposed at a Vermont meeting as early as 1935. Officially introduced here six years later, it has grown so steadily that last year the thirteen county men who cover the state assisted or advised some 3,300 people with a woodland area aggregating more than 60,000 acres. It is the consensus that the program is as advanced in Vermont today as anywhere in the United States.

It would be surprising, with all these forces for good forestry pulling in the same direction, if conditions in our woods did not show some signs of improvement. Veteran foresters who have watched the progress of woodland management over a quarter of a century, agree that there have been advances. The usually destructive portable sawmill is fast disappearing, the wood supply-and-demand factor is in as cheerful a state of balance as it has ever been, awareness of good forestry practice is growing among an ever-larger number of people. Halsey Hicks, at one time the only consulting (i.e., private free-lance) forester in the state, is now one of twenty-five such professionals who can earn a living by telling landowners what to do about their woods.

However, and not unexpectedly, the outstanding area of progress has been in fire control, where dramatic attention has been concentrated for many years.

Here indeed Vermont’s accomplishment is a glittering one. Bad fires in 1903 and ’08 prompted formation of a state-supervised fire-fighting organization, with wardens in every town and standby units of volunteers who can be mobilized and rushed to critical areas at short notice. Smokey Bear propaganda under an industry-government program which makes use of all communications media, has emphasized the importance of using care in the woods and reporting fires immediately. As a result of all this, in fifty years the incidence of fires has gone down by 97 percent; and those fires which do get away burn an average of 3 acres as opposed to the 150 of a half-century ago. This enviable record has caused Vermont to be referred to, in circles in which these things are discussed, as
fighting waste, fire
pests and ignorance

"the asbestos state." A rare accolade in the form of a letter which landed not long ago on the desk of the forest fire chief in Montpelier, came from his opposite number in California. The letter asked, in effect, "How do you do it?"

Less progress is evident elsewhere. Insects and disease—the most destructive forces in the woods today aside from man himself—are huge fields for future attention. Today's efforts are directed at finding out more about the nature and scope of these tree-killers, and attempting effective first aid when one of them, such as the forest tent caterpillar, gets really out of hand.

The tax situation, always a problem in American forest management, is also far from solution. Woodland taxes, levied locally and with wild inconsistency, are a direct encouragement to bad forestry. Inequitable taxation both prompts owners to cut their trees before they should be cut, and promotes a constant shift in land ownership that tends to cripple progress in land management.

Another issue, perhaps now on the way to solution, is the matter of the state's deer herd. Due to a law which for many years restricted the hunters to shooting buck deer only, the herd has increased in quantity (but not in quality) to a point where the young trees, which during the deep snow of Winter may provide the sole source of deer feed, are often stunted and killed. Although a few rough Winters and a recently passed "doe law" may herald an improvement in the deer picture, the orderly growth of certain species of trees—particularly in the southern and central parts of the state—will not recover for years to come.

Research, of course, is pointing an approach to many of today's problems. The United States Forest Service's Burlington outpost, co-operating with the University of Vermont at its Jericho and Underhill experimental forests, is working both on improving maple-sugar production and on raising seedlings which will be able to bear up better under adverse conditions. The Forestry Department at the University of Vermont is studying such questions as: What non-native trees will do best in the state? How can farm woodlands most effectively be rehabilitated? Which trees do best on which soils? What are the weak links in the structure and organization of the lumber market?

Sometimes research yields more than one set of answers. In the still youthful field of forest management, there are a host of difficulties to which no final solution
The following pamphlets are free on request (unless price is given) from the sources indicated:


Community Forests of Vermont (1960)—Agricultural Extension Service, University of Vermont, Burlington.

The Green Mountain National Forest—Forest Supervisor, Box 582, Rutland.

History of Forestry in Vermont (1959)—Department of Forests and Parks, Montpelier.


Vermont Maple Sugar and Syrup (1961)—Department of Development, Montpelier.

Vermont State Parks and Forests (1961)—Department of Development, Montpelier.

Water and our Forests (1951) Agriculture Information Bulletin No. 71—U. S. Department of Agriculture, Washington 25, D. C.

The Whys and Hows of Forestry (1957)—Department of Forests and Parks, Montpelier.

A Woodlot Primer—Richard Brett (1957 reprint American Forests)—Dep't. of Forests & Parks, Montpelier.

SPECIAL AND HELPFUL

has been found. For example, cyclical outbreaks of pests in the woods are often controlled with poison sprays. There is a school of thought that maintains one should never spray because poisons upset the balance of Nature, destroying beneficial organisms as well as malignant ones.

To which the answer is made that man has already upset the balance of Nature—poisons are a necessary emergency measure to ameliorate the effects of our worst blunders.

There are other conflicts of interests in the field, and questions on which there is substantial disagreement. One problem concerns whether to increase state regulation in order to bring about necessary improvement in woods management. Can private ownership do the job that needs to be done, or should a substantially larger portion of the state's woodland be put into public ownership? Should more land be put to "restricted use"—the areas, such as national parks, where no logging or hunting is permitted—or is multiple use the final answer? Most foresters are doubtful about the value of a "wilderness area" for this part of the country, feeling that, with a million acres being newly used each year by burgeoning suburbs, throughways, reservoirs, airfields and the like, a critical shortage of wood may develop in the future.

Of course the amount of pulpwood and lumber that will be needed fifty years hence—a factor both of the fortunes of the national economy and of population growth—is itself in question. More wood fiber will almost certainly be needed. But how much? Wood is being used in some unlikely places today, for instance as a substitute for sand in light-weight cement. No one knows to what extent price-induced substitutes for wood will take over from wood itself, nor what proportion of these substitutes will themselves be made from wood. Because of high labor costs, it is cheaper today to use wallboard in building a house than to use lumber—but the wallboard is itself made from wood chips.

Perhaps in the future a large part of our lumber will be used as trimwork and in other luxury functions, because people like the look and feel of wood and seem to be willing to pay more for the genuine product. But some students think we are heading toward a cellulose economy, where trees will be cut and fed into giant portable chippers right in the woods: self-propelling space-age monsters have been designed to spew out truckloads of chips for the chemical converting plants of the future. Such a development would not only have a revolutionary effect on forest economy but would also cause the forester to alter drastically his present approach to woodland management.

Perhaps an end result of today's population bulge and increased leisure may be to use some forestland exclusively for recreation—never mind cutting the trees for industrial uses. The principle of multiple use, according to one maverick-minded conservationist in the state, may already be outmoded. We should first pick the most socially important use for any given piece of woodland, he maintains; other land uses, if indeed reconcilable with this primary one, should be strictly secondary.

With Vermont located on the edge of heavy population centers, perhaps scenery, watershed, recreation and living space one day will prove of greater importance than lumber and pulp production. Perhaps the state's destiny, with wise management and attention to a number of things neglected in the past, is to become the Switzerland of America.

This point of view can be, and in fact is, vigorously attacked from more than one quarter.

But aside from these speculations about the future, inevitably the lessons of conservation and of wise handling of our trees are finding a wider audience. Regardless of whether trees are important to us in the future as dinette furniture or as scenery, the increasing pressures of a growing society are enhancing their value. And because our forests are ever-so-fortunately a renewable resource, we have another opportunity and a renewed obligation to do a better job with them than we have done in the past.
TIMBER FOR TOMORROW TOO

The Wards—Merlin, Owen and Holly—run a family mill
whose greatest asset is still in the woods

RONALD N. ROOD

WHAT HAPPENS to the Vermont woodland after you cut the trees?”

Not every lumberman will give you the same answer to this one. You’ll get anything from a shrug to a detailed report. One of the wood-users who can give a report is the Ward Lumber Company, Inc., of Moretown. Merlin Ward, president, or his nephew Owen, vice-president, or his son, Holly, clerk of the corporation, can predict the fate of virtually every acre of woods they cut for the next ten, twenty or fifty years. And in a state nearly two-thirds wooded, knowing the probable future of a patch of forest can be mighty important—especially since about one family in three depends on forest products for a living.

The Wards own and operate one of the oldest lumber mills in continuous family operation in the state. But they don’t just buy logs and cut them into pieces: they grow them themselves.

“Our own forests and tree farms could keep us supplied with all the timber we need,” says Merlin, whose business employs some sixty-two men and women. “But we’ve got
Newest thing in Old Clapboards

The Ward Lumber Company of Moretown is considered one of Vermont’s most modern operations, yet it makes one of its specialties the production of old-time narrow clapboards on the machines, one shown above, which are like those invented a century ago. People restoring old houses prefer Ward clapboards to the modern wide ones from the West.

To change a spruce log into clapboards, first it’s cut into 6-foot lengths with an old fashioned drag saw working like a huge power-operated handsaw. Turned on a lathe until it’s a gleaming wooden cylinder, it’s then slung onto a carriage which suspends it lengthwise over a circular saw. Then lowered, it travels from end to end as the saw cuts a slit in towards the center. Given a slight rotation by the carriage, it receives another slit, also pointing towards the center, and so on. The result is some several dozen slits, all radiating out from the uncut center core and—presto!—there are your clapboards.

The uncut cores? Drive along through Waitsfield, Moretown or other neighboring Washington county towns, and you’ll see them along the roadside. These remnants of a nearly vanished industry make perfect, lasting spruce fence posts.

The company has been raising trees as a regular crop since before World War I. Some years they’ve planted as many as 100,000—a potential bumper harvest of saw logs for the company at some future date.

In their tree farming they have received much assistance from the Vermont Department of Forests and Parks. In the past half-century this source alone has supplied them with some 1,500,000 trees grown at the state nursery.

“This is the equivalent of reforesting 1,500 acres,” says Arthur Heitmann, department assistant in charge of forest management. Trees from other sources would swell this total still further.

In addition to growing their own raw materials, there’s another trick the company uses. This is the art of making good wood out of bad, strange as it sounds.

“Timber isn’t getting any better,” says Holly, who manages one of the two main mills. “Much of the stuff we have to cut right now is second-growth, with knots and other defects. If we tried to run our hardwood mill just on top-grade logs, we’d run out of work in time. So we cut second grade ones into hardwood bolts.”

A bolt is a short log from three to six feet long, cut between the defects from a long log. From it flawless pieces of maple and birch for fine furniture are cut on a bolter saw and rip saws. Squares for turning legs and rounds, and flat pieces for seats and backs are produced.

This is just one of the ways in which the company has met the challenge of change, ever since Hiram O. Ward started the business in 1875. The first little water-powered mill was located in South Duxbury. “It employed from five to seven men,” says Merlin. “They were grateful for cash money to add to what they got from the sale of maple sugar, meat and butter. They worked ten hours a day for 10 or 15 cents an hour. And they didn’t take coffee breaks.”

The company moved to Moretown in 1889, and it’s been there ever since. Powered in the 90s by the waters of the Mad River, it produced spruce clapboards, packing boxes and lumber. Peelings from hemlock logs—the logs themselves were deemed almost worthless in those days—went into tanbark for leather.

Now the wooden packing box is almost a thing of the past. It has been replaced by pasteboard and plastic containers. Tanbark is gone, for chemicals now do the work of processing leather. Gone, too, in most places is the genuine quarter-sawed clapboard, which was the siding on almost all the old American homes—but not in Ward’s mill, which still saws them out of spruce logs.

In the main mill, the slim bandsaw whips through the hardwood logs. This endless ribbon of toothed metal goes
round and round on 6-foot wheels. The sawyer handles each log by means of a completely automatic power carriage, perhaps the oldest in the state. Compressed air dogs set the log up to the saw and grip it tight while a number of planks or boards are ripped off. A toothed apparatus comes up from below, flips the log and turns it for the best cut, all with the same apparent ease as a boy juggling a baseball.

Underneath, the “shotgun feed”—a steam piston with a 30-foot travel—drives these tons of steel, rubber hose and Vermont log back and forth as easily as I flip the typewriter carriage for another line.

Much of the credit for the company’s present status goes to Burton Ward, son of the company’s founder. When he and his father met Gifford Pinchot, the great forester, about 1912, they were impressed with the possibilities of reforestation. They began buying abandoned farms, holding the timber on them and planting the fields to spruce and pine.

After his father’s death, Burton continued the plan. He would spend day after day in the forest with his crews, pruning trees, cutting pulpwood and improving his woodlands. “He loved trees as another man would love his dog,” recalls a forester friend.

“Burton—he was my father—died in 1951,” Merlin said. “When he passed away he was 79. It was just as he would have wished. He dropped after an honest day’s work in his beloved forest.

“His life spanned an era of great change in the lumber business. Horses and oxen had given way to trucks, tractors and all kinds of mechanized equipment. The power chain saw had made obsolete the back-breaking work with the crosscut saw. In the mills, automation powered by electricity had taken the place of water wheels and complicated systems of belts, gears and shafting.

“Nor was that all. In the lumber offices a good third of the work seemed to consist of endless reports and taxes with a big penalty if you were a day late. Of course, my father blamed the Democrats.”

The company now owns enough woodland to supply its needs. Vice-president Owen Ward supervises these woodlands along with their forester. Moretown’s single store is owned by the Ward company. Along one side is the post office and the lumber office where white-haired Merlin will greet visitors with a ready smile. Typifying the influence, perhaps, of a livelihood that has spanned nearly three consecutive lifetimes, there’s an old machinery gear in a secure position beneath his office safe.

Much of the Mad River Glen ski development is located on former Ward property. The company sold it for a nominal sum a few years back in order to encourage the development of this facet of Vermont life. If you drive along Vermont 100 through Moretown and Waitsfield, you’ll follow the valley of the Mad River. In Moretown you’ll see the two mills a half-mile apart—the modern bolting mill managed by Holly Ward, and the larger band-saw mill run by Owen. The ruins of a third mill which burned three years ago are still there, too.

Log trucks rumble, machinery clanks, fork-lifts hoist the logs and saws scream loud enough to silence a shouting man. There’s all the bustle of a lumber business in full swing.

But a greater job goes on in silence. This is the steady growth of the Ward trees, some 29,000 acres of them. END

Culls go too: tractor draws bad and good logs from model cut
Barking up
Which Tree?

Right and below are photographs taken by Aubrey P. Janion of the bark of eight native Vermont trees, reproduced here one fourth of life-size. How many can you identify?

Hint: they’re all hardwoods.

Consolation: professional foresters can’t always tell barks from photographs.

Answers: in the Post-Boy on inside back cover.

Forex Products

Around 75 species of tree grow in Vermont, of which not more than one third is used commercially. Here is just a sampling of products derived from the state’s woodlands. (National figures are more than 500 species, around 4,500 commercial uses.)

Baseball bats  Cough syrups  Paper products
Baskets  Disinfectants  Piling
Bassinets  Doors  Plastic products
Beds  Drugs  Plywood panels
Benches  Fence posts  Poles
Bobbins  Flooring  Railroad ties
Bowling pins  Fly sprays  Shaving soap
Bowls  Frames  Shingles
Boxes  Fuel wood  Silos
Brooms  Furniture parts  Snowshoes
Brushes  Glass cement  Stanchions
Cabinets  Golf tees  Sweeping compound
Cattle bedding  Gummed tape  Tables
Cellophane  Handles  Tapes
Chairs  Ironing boards  Toys
Charcoal  Lazy susans  Trailers
Christmas greens  Maple syrup & sugar  Trays
Clothes dryers  Moldings  Truck bodies
Construction lumber  Moveable partitions  Tubs
Couches  Oars & paddles  Wallboard
Color of the Forests

(BELOW) Near East Barnard — GRANT HEILMAN

(OPPOSITE) East Cabot — DAVID WITHAM
Metoswee Valley farm near Dorset—Winston Pote.

(overleaf) Mt. Mansfield near Underhill Center—David Witham

22 • Vermont Life
BAT CAVES

Harold B. Hitchcock spelunks for science and gives tips on a fast-growing sport

Photographed by John F. Smith at Mt. Aeolus, Dorset

Though many people shrink from entering caves because of the bats that inhabit them in season, it is the bats that for the past 25 years have been luring me into Vermont caves. My interest in studying the distribution of the various species of bats in the state, their sex ratios and migrations has made me a cave explorer.

Bats use caves mostly in the winter, when they require a protected place to hibernate. Since the bat lives entirely on flying insects, little food is available from about the middle of September until April. Like the better-known woodchuck, the bat puts on fat during the summer, then by letting its temperature drop to that of the surrounding cave until spring, uses the fat up slowly.

Vermont's commonest bat is the little brown bat, Myotis l. lucifugus. For hibernation, its preference is for a temperature in the low forties or upper thirties, and it will hang up in caves, usually in clusters, where the temperature is...
ABOVE—Groggy: After people and lights go away he'll sleep until late May.

OPPOSITE—Handful of sleep: The author will band these clusters of bats to learn where they spend their summers.

right. As the cave becomes cooler with the advance of Winter, bats shift from the more exposed to better sheltered areas within it. Moisture-laden air moving into the cave may cover some bats with droplets of dew, until each hair is tipped with a glistening jewel. At a distance the bat may appear white. If someone tells you about albino bats seen in a cave, you can be pretty sure they were really only dew-covered.

Bats wake up and fly around from time to time during the Winter, even in parts of the cave where temperature conditions are optimum. Aroused from deep hibernation, a bat requires fifteen or twenty minutes to become active enough to fly.

In the spring the females leave the cave before the males. They have already mated, and need to get their young born early enough in the summer for them to be able to get fattened up for the hibernation to come. The sociable females make themselves unpopular in the summertime with many a Vermonter by their choice of roosts in attics and other dark, warm retreats in buildings. In these colonies, which may have from a dozen or so bats up to several hundred, the young are born. No nests are built, and the single baby that is customarily born about the middle of June may cling to its mother as she leaves the roost for food at dusk. Growth is rapid, and after a day or two the baby is left behind in the attic while the mother seeks food and water.

During the Summer adult males are rarely encountered inside buildings. Possibly they find the maternity centers too crowded, hot and smelly. At any rate, they stay outside, hiding during the daytime beneath loose bark, behind shutters and in other retreats.

A few bats may be found in caves weeks before frost. These are probably transients; possibly they are testing for a suitable place in which to hibernate. Banding has shown that bats return faithfully year after year to the same cave, just as the females do to their Summer roosts. The distance between the Summer and Winter homes of the little brown bat may be as great as 165 miles.

Studies now in progress show that in the Spring bats using the cave on Mount Aeolus near East Dorset scatter conspicuously to the southeast, across southern New Hampshire to eastern Massachusetts and Rhode Island. Some, of course, remain close by, but we know that bats may pass up caves near their Summer range and hibernate at a distance.

Recent publicity about a bat cave in Texas and the menace of bat-borne rabies has alerted the public to the danger of exposure to bats. The little brown bat and other species that occur in Vermont have been implicated as carriers of rabies. For that reason one should not handle bats; professional bat workers get immunizing injections to protect them. Because bats are valuable as insect destroyers, they should not be molested except where they are a nuisance in buildings.

One need have no fear, however, of Vermont caves, themselves, for they are totally unlike the bat caves in the Southwest, where, it has been reported, the very air may carry the rabies virus.

Most of Vermont's caves occur in limestone and marble
formations in the western part of the state. They were formed by the dissolution of the rock by water, and streams still flow in some, though more often no stream is found. Water that drips from the ceilings collects at the bottom of the cave or seeps through the floor. Possibly because of the area's glacial history, Vermont caves are not as large as American caves go. A few hundred feet in length is as big as you'll find. And many of the passageways are not designed for walking. Crawling or slithering is the means of locomotion. Because of their limited size you don't need to worry about getting lost in them. The better-known caves are also relatively safe with respect to the stability of their walls and ceilings. Greater danger lies underfoot where slippery rocks invite falls. A safety hat is appropriate even if it is more to protect the wearer from crashing his head against the roof than from falling rock.

Vermont caves lack the spectacular formations characteristic of many commercialized caves. Flowstone on walls is about all one can point to; large stalactites have not formed, and the small ones originally present have, for the most part, been broken off by souvenir hunters. Each Winter, however, a beautiful crop of ice formations develops at the mouth of several of the caves. Those with small entrances, like Nickwackett (in Chittenden) and Plymouth, sport a delicate fringe of hoarfrost at the mouth. Warm moisture-laden air from the cave, striking the colder objects outside, drops its water as crystals on the rocks and nearby plants. Within the caves, water dripping from the roof to the cold floor builds stalagmites; as Winter advances the roof of the cave may become cold enough for ice stalactites to form near the entrance. Sometimes the advancing formations meet, forming ice pillars and curtains. Seen with artificial light against the dark walls of the cave, these seasonal formations excel in beauty their stony counterparts. The larger ones may last into the Summer, shrinking gradually as the season advances.

Back in 1936 when I began my cave-crawling, few people visited Vermont caves. However, the caves had been both known and visited for a long time, as ancient initials and dates carved in cave walls forcefully testify. But the earlier visits were largely impromptu, by local groups relying on candles and kerosene lanterns.
GREEN MOUNTAIN GIFTS
A varied and colorful selection for your own use at home and for early Christmas planning.

Shop early and easily from this fine selection of Vermont publications.

Vermont Life Magazine—subscription copies with the seasons for one, two or for three years.

Big color—illustrated books—two to choose from on Vermont.


Scenic color prints—for your own framing.

VERMONT LIFE SUBSCRIPTIONS

Vermont Life
Montpelier, Vt.

Gentlemen:

Please enter □ 3, □ 2, □ 1 year subscriptions for:

NAME
ADDRESS
CITY_________ZONE_________STATE

Rates: 3 years $5
2 years $3.50
1 year $2
If Foreign:
Add 40¢ per yr.

I enclose □
Bill me □

NAME
ADDRESS
CITY_________ZONE_________STATE

If gift please fill in here so you will receive expiration notice.
Vermont to you through the seasons

What better gift for those away from home?

A subscription to Vermont Life magazine

The Green Mountains can stay in your heart all the year through the pages of this fine, highly-illustrated magazine.

Each issue contains articles by leading authorities on fascinating Vermont lore, on today's happenings, on nature subjects, history, sports, the people of Vermont. And with this are 16 pages or more per issue of beautiful scenic color pictures, as well as outstanding black and white picture articles.

Don't miss a single copy of this official Vermont state magazine, now reaching almost 100,000 Vermont fans each issue in all parts of the world.

(Order Blank on Overleaf)
Day by day through the Vermont year

THE VERMONT LIFE CALENDAR FOR 1963

Now available is this bright new scenic and engagement Calendar from Vermont. It contains nineteen striking full color views of the Green Mountain state through the seasons. Separate engagement pages, the notation areas enlarged this year, also carry pithy quotations by Ethan Allen and other famous Vermonters.

The revised design allows the new publication to be used as a wall calendar, or flat as an engagement book. Calendar sheets are later removable to leave a book of scenic views. Printed on heavy papers, shipped in mailing carton which can be re-used. Note: Supply is limited and orders cannot be guaranteed after Dec. 10.

(Order blank on overleaf)
Two best sellers from Vermont

Brand new last Fall. Includes 60 pages of full color illustrations. The best from Vermont Life's first decade. Supply very short.

Order now for Christmas giving

Vermont Life
Montpelier, Vt.

Gentlemen:

Enter my order and mail these special Vermont gifts:

MY NAME
ADDRESS
CITY

*Postpaid in U.S. & possessions, elsewhere add 25¢ each item.

I enclose □; Bill me □: $___________ for these orders.

Note: Enclose separate sheet of directions if these gifts are to be mailed direct to recipients.

USE ORDER ENVELOPE ENCLOSED IN THIS ISSUE

Fine Vermont Color Prints for framing

Autumn, Near South Woodstock, D. Witham—13½ x 10¾

Winter, Spruce Peak, L. Azarraga—28 x 10¾

Spring, Mt. Mansfield, M. Derick—13½ x 9½

On heavy paper, shipped rolled.
Today, though, cave exploration has become a sport; enthusiasts from New York and other cities spend Vermont weekends probing into even the remotest caves. College outing clubs run organized cave trips; summer camps do the same. Even the serious scientific visitors have increased, for bats have achieved popularity as research animals. Carbide and gasoline vapor lanterns and battery-powered lamps have replaced the candle and kerosene lantern.

Unfortunately the bats have not taken kindly to these intrusions. Where hundreds could be found in caves in 1936 only a handful can be found today.

The sports-minded cave crawler is known as a speleologist, does not like to be confused with a chiropodist. He will not leave a cave until he has squirmed through every crawlway that his body can possibly be squeezed through. You encounter him mostly during the non-skiing months, but long before the last snow has melted from the wooded slopes he’s back again to initiate some newcomers or to get to the end of the passage he’s heard about but “must have overlooked” on the last trip.

For the benefit of such cave detectives, I offer the following account. It is from Geography Made Easy, by Jedidiah Morse, D.D., and published in 1819. Even back then this book was in its twentieth edition.

“In the town of Clarendon, on the side of a small hill, is a very curious cave. The chasm, at its entrance, is about 4 feet in circumference. Entering this, you descend 104 feet, and then opens a spacious room 20 feet in breadth, and 100 feet in length; the roof of this cavern is of rock, through which the water is continually percolating. The stalactites which hang from the roof appear like icicles on the eaves of houses, and are continually increasing in number and magnitude. The bottom and sides are daily incrusting with spar and other mineral substances. On the sides of this subterranean hall are tables, chairs, etc. which appear to have been artificially carved. This richly ornamented room, when illuminated with the candles of the guides, has an enchanting effect upon the eye of the spectator. At the end of the cave is a circular hole, 15 feet deep, apparently hewn out, in a conical form, enlarging gradually as you descend, in the form of a sugar loaf. At the bottom is a spring of fresh water, in continual motion, like the boiling of a pot. Its depth has never been sounded.”

I’d like to see this cave, and I have tried to find it. Roy Webster, superintendent of the Vermont Marble Company’s Danby quarry, guided me to a cave in the area, Colvin’s Cave. It is on a hillside (which is very likely to be the case anywhere in Clarendon), its entrance is about four feet in diameter, and at the end is a pool of water.

But the pool was not boiling when I saw it; and its depth was scarcely four feet. Between the entrance and the pool, little corresponded to Reverend Morse’s description. Could it be that under the enchanting influence of the guides’ candles, things looked different to him? Or might it even be that the good geographer never visited the cave, but accepted at face value the tall tales of others?

There is another cave that perhaps needs further exploration—the one on Mount Aeolus, referred to earlier. In the Geology of Vermont (1861), Professor Edward Hitchcock notes that the cave was “obviously” formed by an ancient river. Although unable himself to penetrate very far, he reasoned that the cave must continue, probably passing right through the mountain. Lest his reader be in doubt as to his meaning, he even drew a diagram showing the cave opening on the opposite side.

One could start looking for the missing part at either end, I suppose. If able to confirm the professor’s hypothesis, one would really have found a cave that should be described in the next edition of Morse’s Geography Made Easy (which by now must be in at least the fiftieth edition).

Some caves have a way of disappearing entirely. You’ll encounter the old hunter who came across a cave years ago and has never been able to find it again, “and it was a real big one at that.” Dimensions of other caves reported to you, the number of bats within them, may tend toward the sensational: the caves, for example, which “go clean through the mountain” and have bats so numerous “you have to keep ducking to keep them from flying into your face.”

If you want to explore for caves, the marble and limestone belt should keep you busy a good while. In other parts of the state, talus and fault caves can be found. To get leads, inquire of local inhabitants or look up “Underground Vermont,” in the Spring, 1956, issue of Vermont Life, and also Caves of Vermont, by John Scott.
The Vermont Autumn

PHOTOGRAPHED BY

DONALD SULTNER-WELLES

Though the color photographs of Donald Sultner-Welles are known around the world through his illustrated lectures, given at the behest of the United States State Department, and his talks before many club audiences in this, his native land, the series on Vermont Autumn here reproduced is the first to be published in this country.

One of the elements of this photographer’s genius is certainly that of instant recognition of composition. This writer has watched Sultner-Welles at work and has never seen him hesitate over a subject. The resultant photograph is always a successful arrangement into an artistic whole.

Another and much more rare talent, which seems to come from the imaginative and poetic instinct of the photographer is original observation. The subject, more often than not, appears in a new and never-before-recognized concept. The viewer is delighted by the joy of discovery. The picture has captured a new attitude, a new relationship between forms and between colors.

A third ability, and possibly the most difficult to attain, is that of observing subjects in series. By almost prophetic insight Sultner-Welles brings about continuous sequences, each picture complimentary to its predecessor, and each adding qualities that heighten the viewer’s delight in the work as a whole. Looking upon such a grouping, obviously intended to be considered as an artistic unit, can be likened to the appreciation of music, where the hues have become notes of a complete melody.

CARL CARMER
Woodland's Beating Heart

Presenting the greatest dramatic actor of our woods and fields:
THE RUFFED GROUSE

RONALD N. ROOD

She fluttered down the trail, whining pitifully like a puppy. One brown wing hung uselessly and her left leg seemed hardly able to support her body. Her splendid tail, spread fanwise, dragged in the dust.

"Ruffed grouse," grinned my friend. "She thinks she's fooling us. That broken wing is just an act. Ten to one she's got a bunch of chicks somewhere. Don't move or you'll step on one."

He hardly glanced at the mottled bird five feet in front of us. Instead, he squatted down and peered at the leaves.

Now she changed her tactics—so suddenly that we both stepped back. Hissing, she rushed at us, her "broken wing" forgotten. Her feathers fluffed until she looked twice her size. Stamping her feet, she pulled up short just a few inches away. No mother hen ever looked more defiant.

Warily, we bent over again, with one eye on the belligerent grouse. We could see nothing but dry leaves and the rut made by a tractor during sugaring a few weeks before. I had been carrying a willow switch. Idly, I poked it at a brown bug which had stirred on the surface of a leaf. The bug disappeared.
I heard a chuckle from my friend. “How’d you ever spot him? His camouflage is perfect.”

I looked closer. The “bug” was there again. It was no bug at all, but a twinkling eye. And the “leaf” was a brown-black downy chick, scarcely larger than a ping-pong ball. Crouched against the earth, it blended perfectly. Only its eye movement had given it away.

We finally found seven of the tiny creatures. I picked one up. Its cry of peril brought forth an equal note from the frantic mother. Carefully releasing it, I watched it tumble headlong into the tractor rut. Try as it would, it could not jump up over the sides. The four-inch depression would have been an open grave had I not rescued it.

The dangers that beset our “partridge” are fantastic. The nest, scooped out at the base of a stump or log, is a welcome handout to skunks, foxes, squirrels and even chipmunks. These latter apparently think the 13⁄8-inch eggs are some new species of nut, for they carefully hide them in their storehouses. A single downpour may blur out the lives of an entire family if they get chilled and drenched before they can run under mother’s wing. And at every instant they must watch for danger from the air, the trees, the ground. Small wonder that the grouse may have from ten to fifteen chicks!

It all begins a few days before the first Spring flowers appear. The cock grouse finds a fallen log in the forest. He seems quite fussy about this; the log must be about one foot through or larger, and partially screened by bushes. Rarely, he settles for the exposed root of a large tree, but one thing seems sure: no logs or roots, then no cock grouse—and hence no “partridge” in the woods.

Then starts one of nature’s thrilling displays. Although he weighs but a pound and a half, he fluffs up his feathers like a little turkey. That black-bordered tail fans out and the wings project down at his sides. The metallic-black ruff spreads like an Elizabethan collar. His brown top-knot rises like the crest of a jay.

Back and forth he patters on the log, turning this way and that. He hisses with a noise described by Cornell’s Arthur Allen as similar to briskly rubbing the sleeve or trouser leg.

Finally the strutting stops. He takes a position crosswise to the log. Rising up, tail pressing down against the log, he flaps his wings forward and upward. “Thump!” the compression of the stroke makes a beat in the air. “Thump!” Another beat half a second later, as the air is again compressed. Then “Thump—Thump—Thump—thum—thum—thum—thum—thum—thump—thum—thum—thum—thum—thum” as the beats come faster and faster, ending with a drumlike roll. The whole thing takes about ten seconds.

Little louder at close quarters than at several hundred feet, the sound is felt as much as it is heard. It can be noticed half a mile away. Edward Howe Forbush, the Massachusetts naturalist, called it “the muffled beating of a great heart.” The Indians called the grouse the “carpenter bird” because it was thought the noise was made as its wings struck the log like a hammer. But Dr. Allen’s motion pictures of a grouse drumming show that it strikes nothing but air.

You can approximate this sound by beating your chest. Try it sometime in the woods—when nobody is looking. If you’re lucky, you may hear an answering roll. For the drum of the grouse is apparently a challenge to other males just as the strutting is for the benefit of some little lady who comes to the vicinity of the log, ostensibly in search of buds and green leaves. A drumming male lays claim to about four acres of woodland and a single mate, although it’s suspected that sometimes he may have more than one wife. In fact, there are cases where two females have sat on the same nest at once.

He cannot stand the presence of another male. Grouse have been known to attack one-lung tractors, apparently in the mistaken belief that their pop-pop-pop is some monstrous interloper. And my forestry professor told me about a wonderful grouse-fight he started by drumming on his chest until two males came to the spot and pitched into each other.

Occasionally it’s possible to sneak up on a drumming male, he’s so intent at his task. You may even be lucky enough to sit on the other end of the log and watch him. But by late June or July he falls silent. However in Autumn he may reminisce at his favorite log. Sometimes he’s answered by an adolescent son across the valley.

The female lays her buff-colored eggs in May—one a
day, like a chicken. Looking like the male except for a smaller throat-ruff and, often, a broken tail-band, she sits on them for about three weeks. She blends perfectly with the forest floor. She often adds to the concealment by covering herself with leaves and grass. Then, as she steals away to feed, the leaves slide off and hide the eggs. The young, scarcely half the size of baby chicks, hatch in late May. They can walk minutes after they are born.

In ten days their little wing feathers are strong enough for them to fly. The first grouse family I ever saw as a boy astonished me by taking to the trees. There they teetered, looking down at me while the female uttered her nervous “quit-quit.” They looked like fluffy, tailless sparrows.

All Summer the feathers develop, while the young wander through the brushland and second-growth woods. The family fans out in front of the mother like an amoeba, devouring insects, wild strawberries and other fruit. They keep in touch by quiet little calls. They seldom see their father, though he may join them in the Fall. By late September they are nearly full grown, mottled brown or gray, with barred breasts.

Their numbers have been reduced in many ways. Two years ago I found a mass of feathers under a tree. An owl, searching for mice, had come across a bonanza of roosting grouse. The house cat gone wild, one of the worst creatures in the woods, takes more. Forest fires pay no heed to a mother feigning a broken wing; nests of roasted eggs are sometimes found, with the bones of the mother a few feet away. Babies become blinded and weakened by lice and mites. Disease or enemies soon finish them off. Blackhead disease of turkeys and chickens sometimes runs amuck through a forest full of grouse. A brood that averages six chicks in June will be cut in half in July; by late August only two will be left.

The Indians called the Fall months the “crazy moon.” They noticed the strange antics of some grouse at this time. One October day I was driving through Hinesburg when a feathered bullet hurtled through the air a few feet in front of me. Then it crashed into the side of a building.

I stopped my car and knelt beside the grouse. Dazed but still game, it fearlessly surveyed me. I could see the beginning of the feathered “stockings” which it would develop along the shinbone for Winter protection. Its toes were edged with newly formed “snowshoes”—temporary comblike projections to enable it to walk on the soft snow.

I reached out to stroke it. Little gamecock that it was, it delivered a resounding peck with its beak. Fluttering to its senses, it took off with a roar of wings. I watched as it veered to left and right, crashing through the branches of an elm and sailing out across a meadow.

No one can explain the “crazy flight.” No one, either, has explained self-tamed grouse, which sometimes follow campers like pet chickens.

Nor has there been a good explanation for the “grouse-cycle.” This is a population build-up of about ten years; then there’s a sudden crash of numbers with only a few left. Cold, wet Springs have been suggested as a cause. So have been parasites, disease and the deadly sleet storms, when the Winter supply of buds and twigs is coated with ice. Perhaps it’s a combination of a number of factors. The cycle seems to operate on most of its range, from Pennsylvania to Oregon, south along the mountains, and north into Canada and Alaska. Many wildlife managers suggest a closed season on hunting at the “low” of the cycle to help the grouse recover more quickly.

Once you hear the thunder of a grouse taking off through the woods, you’ll not forget it. It rises so violently that it stirs up a cloud of leaves and dust in its wake. Then it flicks its wings saucily as it sets for a triumphant glide into a thicket.

It was not always this wary. At one time it was called “fool hen,” not only because of its chicken-like appearance but because it placed its trust in man, even allowing itself to be killed with a stick. A century ago it sold at eight for a dollar in Boston. Since then it has learned to protect itself. Now it quickly puts a tree or bush between itself and danger as it flies, and is gone in a moment. Pursued by a hawk or day-flying owl in Winter, it may dive into a snowdrift. Then it burrows several feet horizontally before it emerges in full flight. It’s been known to plummet into water, for it can even swim if necessary.

Often in the Winter we find a hole in our woods where a grouse has plunged into the snow for a cozy nap. Next morning it bursts out again—unless a rare ice storm traps it beneath the crust. Foxes sometimes pounce on the hole, but usually come up with only a mouth full of snow. The wily grouse tunnels two or three feet to one side before settling down.

Look for Bonasa umbellus, whose name means “grouse of the shade,” in overgrown woodlots and openings in the forest during the Summer. Catch your breath as it explodes from a thicket of beeches, oaks, hawthorns, sumacs and other seed-producers in the Fall. Find it in mixed hardwoods and evergreens in Winter, feeding on poplar, birch and wild apple buds. See it gathering roadside grit to help its gizzard crush food. Discover it under a January moon, snug against the trunk of a hemlock or other evergreen while frost forms around its nostrils and the maples crack with the cold.

Occasionally you’ll even see it in a cornfield near the woods, or sampling the edge of a buckwheat patch. But you’ll seldom find it cooped up on a game farm like a pheasant or quail, for later release. Though it’s been raised experimentally, it seldom can abide too close contact with man. It lives its wild life magnificently, at top speed. As one old-timer told me, almost reverently: “There ain’t a finer bird in the woods.”
SPECTACULAR new Vermont landmark is the University of Vermont's vast field house and gymnasium, the largest in the state and then some. When it's open this October, it will have cost close to $3 million. It stands southwest of the campus center on a sightly Burlington hillside facing Mt. Mansfield to the east.
The bare bones for this dramatic building were fashioned just over the hill by the Vermont Structural Steel Corporation, born 54 years ago in one of the region's first industrial parks.

Within the 488 x 140-foot field house its 53-foot high steel arches enclose first a 200 x 85-foot hockey rink, which off-season will double for tennis, badminton and volley ball courts.

They also cover in the 234 x 123-foot cage area a regulation baseball infield, a 1/10-mile track, broad jump and pole vault areas and even a golf range.

The connecting gymnasium, of conventional rectangular construction, houses three regulation college basketball courts, squash and handball courts, locker rooms and a Competition-sized swimming pool. There'll be room for 5,000 spectators, too.

In all, 28 huge four-section arches were required for the field house, as well as a multiplicity of conventional steel beams and girders. Shown going up last Winter, these curved steel girders and the complex operations required for their erection attracted interest not only within the state but far beyond.

After the production of the steel, skilled erection crews took over. At the field house site each quarter segment of an arch was joined by a huge pin to a concrete anchor. Next, while still at ground level, a second quarter was joined. Meanwhile, corresponding members were being assembled on the opposite side. Then two derricks hoisted the overlapping arches upward scissor-fashion until the ends met at the top of the arch for fastening. It took ten men eight weeks to complete the exciting task. Afterward, matching roof plank was nailed to the strapping planks atop each arch by the general contractor.

Behind this tremendous skeletal framework lies a story of Vermont industrial pioneering and of foresight born long ago.

The acorn of an industrial oak took root in 1890, when Burlington visitor C. W. Scarff, envisioning bright prospects for the area, with A. O. Ferguson of Burlington bought a large tract of land southwest of the city. Most Burlingtonians of that day, thinking the city "had got her growth," shrugged skeptically at the purchase of this remote tract where only two small cottages broke an expanse of unkempt fields.

But soon six large industries were thriving on The Addition, as it was known, and within a short time it was hailed as "a pronounced success, part and parcel of the city." Although the site has been long since engulfed by new expansion, two residential streets in the area still bear the name of The Addition's founders.

Scarff, a prophet before his time, stoutly maintained that if Vermonters would seek home investment for surplus earnings "no industrious person would have any cause to leave the state for lack of profitable employment" and
that "if this principle were rigidly adhered to, the popul­
ation and wealth of Vermont would be doubled within a
decade."

This philosophy motivated one of The Addition’s pi­
oneer industries, the foundry and machine shop of Lang
and Goodhue, which was transformed in 1908 to the Ver­
mont Construction Company and became in 1929 the
Vermont Structural Steel Corporation.

Much of the once scoffed-at Addition today is covered
by a complex of long, low buildings bordering Flynn Ave­
 nue and the busy adjacent streets. Above the big yards
stockpiled with raw steel shipped from Bethlehem and
from Pittsburgh, tall yard-cranes move along high run­
ways, transferring the tons of metal. Inside, other cranes
on overhead tracks shift beams from one work area to
another or load company trucks for deliveries to destina­
tions in Vermont, northern New Hampshire, northern
New York and sometimes northern Maine and western
Massachusetts.

HOW TO MAKE A GIRDER
First, heavy-gauge steel plate is cut by torches which
run on tracks set to conform with the design templates.
Then the side rails of an arch section are drawn in
by heavy clamps and side braces.
Finally the three main elements, together with side
braces and brackets, are permanently welded together.

Workers in the company’s six specialized departments
employ a variety of modern machinery and techniques on
products which are custom created rather than mass pro­
duced. Besides fabrication and warehousing for the con­
struction industry, company services include the erection
of structural steel, ornamental iron, fire escapes, roof
decks, stacks and related items. The company does ma­
chine work, metalizing, welding, repairing of heavy equip­
ment, rigging and moving heavy machinery. They sell
and service many allied products for commercial, indus­
trial and residential buildings, and maintain a branch sales
office in Plattsburgh, New York. There is also, of course,
a large corps of engineers and draftsmen in company
offices.

An operation of this scope requires teamwork and ex­
perience, so it is not surprising that many of Vermont
Structural’s 140 employees count their service in decades.
Current seniority is held by President Floyd W. Moore
and Alan G. Kirkness, production manager and vice­
president, both of whom joined the organization in 1924.

Both officials and production workers of the corpora­
point with considerable pride to the firm’s nearly
8,000-ton output of steel products last year, and also to a
record of good labor-management relations and a wide
reputation for good work.
The days of my boyhood were spent in Middletown Springs, a tiny village ringed round by hills in Rutland County. My father was minister of the Congregational church, a post he obtained soon after the turn of the century and which he held for nearly a decade.

Social historians sometimes refer to this period as America's Golden Age; it combined the first burgeoning of the abundant life with the last carefree years of international isolation. I doubt if anybody in Middletown ventured to think in terms as broad as these, but the town, as I look back on it now, must have considered itself to be very well off—with good business, a sense of security and fair prospects for the future. And that sense of well-being rubbed off on our family. We had everything we needed and no particular problems. For myself I recall none of the nagging little fears and frustrations common to childhood, and no inhibitions coincident with providing a proper example as the minister's son. Everything seemed to me eminently satisfactory.

As time has passed, the Middletown Springs of 1900 to 1910 has taken on new interest, quite aside from the usual sentimentalizing about one's childhood and the yearning for the good old days. This appeal seems to derive both from a fuller appreciation of the unique and engaging pattern of life the village had worked out for itself, plus a sense of precious possession through recollection of a little world that has entirely vanished, a world not only of customs and mores and people, but of much of the physical environment as well.

I was very young when we moved to Middletown from a small town in Michigan, so that my knowledge of the village and its activities developed only gradually. By the time I was six or seven I had become fairly well acquainted with three locales of interest near enough the parsonage so I could go and come more or less at will. Most appealing of the three was the little factory of the Gray Horsepower Company, to the south and practically next door, which manufactured treadmills for one, two or three horses, as well as threshing machines and corn cutters and circular saws to be powered by horses. A step beyond the factory was the diminutive Poultney River, actually little more than a brook, and considered by all parents to be safe to play in. Across the river and up a gentle rise to the left were the grounds of the Montvert Mineral Springs Hotel which had failed, and whose buildings had been taken down.

These spots were sources of continual beguilement for the small boys of the village. The factory was the real lodestar because of its steam engine. This was housed in a basement room with a cellar hatchway arrangement at ground level opening directly on the street. The hatch was fitted with a swing window which was open on all but the coldest days of the year. This arrangement provided a made-to-order gallery for the observation of the panting behemoth below and there were few days winter or summer when none of us reported for at least a routine inspection.

The engine was not large, even for its era. Its flywheel carried a trundling leather belt nearly two feet wide which disappeared through a back wall to transfer the power of the engine to the woodworking machines in the factory. The wheel turned slowly, perhaps 30 r. p. m., and
there was a time for flavor
and peace was reality

it took us some years to understand that the piston rod sliding back and forth in its cradle seemingly without effort was what made the wheel turn, and not the other way around. The cylinder jackets were cased in polished mahogany and brass. The whirling spheres of the governor were brass and so were the oil cups and many of the fittings on the valve rods.

As something to watch the engine was of unparalleled interest. Everything moved. The sliding piston rod conveyed its lateral motion to a crank assembly which appeared to go up and down. The governor spun merrily in a horizontal plane. The various valve rods seemed to be moving in every possible direction. In spite of its eye-filling splendor the engine was rated at only around 50 h.p., although at the turn of the century a horsepower was an honest unit of measurement, not a gimmick to sell new automobiles.

The engineer was an introverted type, not given to small talk. He spent most of his time tipped back against the wall in an old captain's chair, reading the Rutland Herald of two days before. We did not consider that his silence was hostile and we spent hours looking and listening at his window. We especially liked to watch him filling the oil cups every hour or so, some of them in motion. On colder days we welcomed the dank, warm air which welled up through the hatchway.

The factory provided another spectacle which we could watch comfortably from the fence which separated Eph Gates's house from the factory yard. Nearly every morning a succession of four-horse teams hitched to heavy wagons lined up under a derrick on the front side of the shop and took on loads of completed machinery for transfer to the railroad at Poultney, eight miles away. All Gray machines were finished in bright reds and blues in our day, with elaborate hand-painted ornamentation. Much of the time these loads were not covered and we were very proud of their shining newness and splendor. We would have been even more proud, I suppose, if we had realized that some of them were destined for the far places of the earth.

When watching palled, we turned to the old hotel grounds for less passive entertainment. The hotel was taken down a year or two after my arrival in Middletown, so there was no activity there except what we provided for ourselves. However, the grounds contained a number of points of interest readily adaptable to make-believe play. There were the cellar hole, various walks and paths, a couple of footbridges over the brook, and the ornate Victorian springhouse, the raison d'être for the hotel. We could devise endless games around its four spigots, each of which was supposed to deliver a different variety of water: one was iron, another sulphur, a third “Vermont pure spring,” and the fourth what anybody thought it was.

My earliest visit to the hotel grounds was made with my father before the building was torn down. I have no recollection of the occasion, but I appear prominently in a photograph my father made that day and later transformed into a hand-colored lantern slide. My father had combined photography and the ministry for several years before coming to Middletown and, while his pastorate at this time brought $700 a year and parsonage rent free, the
veil of amateurism he pulled over his photography was pretty thin. He had professional equipment of excellent quality and I'm sure he received money, as well as favors, for the fine pictures he made. The slide reveals the Montvert in all its Victorian grotesquerie. In spite of its lack of architectural appeal the hotel had done well for thirty years catering to America's new-moneyed class. When these people had grown tired of water which smelled like rotten eggs and started taking up new fads, the old hotel sank into financial doldrums and was abandoned.

Meanwhile the village, and the minister's family in particular, was watching the start of a new variety of hotel business—summer boarding-houses. Middletown already had two, the Cooks' and the Gardiners', and both were attracting substantial patronage. Our family was interested because the people who came to the boarding-houses were middle-class and conventional: they went to church, even in summer, and supported the village churches, mainly my father's. And they were deemed important enough by the Congregational parish so that it was written into my father's contract that he could not take his annual vacation during the summer-boarder period.

The factory, too, was beginning to feel the pressures of a way of life that was changing all over America. The Grays had already begun to manufacture on a limited scale their own version of the ludicrous, puffing, single-cylinder gasoline engine which was beginning to appear on American farms. This innovation was just in case the engine ever seriously threatened horsepower. And Frank
Rogers, who joined the firm as a young man, recalls that there was some talk of adapting the threshing machine to the higher gas-engine speeds, if that ever became necessary.

Otherwise the little shop hummed along as usual, ten hours a day, six days a week, except Thanksgiving and Christmas. By the time we arrived in Middletown the management of the business had passed to a second generation and the sons had enlarged and improved the operation to a substantial degree. There were two sons. The village boys, and most of our elders as well, stood in considerable awe of them, especially of A. Y. Gray, whom I remember as withdrawn and taciturn. His brother, Leonidas, was more outgoing, with a distinguished white beard and an extensive library. He must have looked, as I think back now, more like a college professor than a manufacturer. I remember the fancy new steam radiators in his big Victorian house and the succession of gaudy red automobiles with lavish brass trim which he owned and drove with the enthusiasm of a teen-ager.

The brothers were in their sixties during our years in Middletown Springs and they had acquired a colorful progeny of sons, daughters, in-laws, grandchildren, nieces, nephews and cousins. I recently came across a photograph of the clan on a bicycle outing in the 1900s, and I counted a total of twenty people. This included all the owners and managers of the factory except possibly one. They were a tightly controlled family unit operating strictly on a tribal basis.

Whether the Grays as a group were properly regarded as the sum total of the village aristocracy was a matter of some disagreement among the rest of Middletown people. I am sure now that my father felt that the Buxtons should be counted in the top stratum, too. The Buxtons were landed gentry in contrast with the mill-owning Grays. J. E. Buxton had gone West as a young man, got into strip-mining in Iowa—Buxton, Iowa, is said to be named for him—and had returned in middle life to settle down with his money in Middletown. He built himself a fine brick house on the edge of the village, with big barns, auxiliary buildings and shops, all in the manner of the feudal baron, and went into the breeding of blooded animals, modern dairying and apple orchards. His son, Ben, built a pretentious house with marble bathrooms on Buxton Hill.

J. E. Buxton occupies an especially warm place in my memories of Middletown because of his kindness to the minister's family. It was he and "Madame" Buxton who took us on picnics, gave us our first automobile rides, invited us to the big house for Sunday dinners. "J.E." insisted on having the dessert brought in with the first course and placed on the table so that he could see what it was and plan accordingly. After dinner he led his guests on a promenade around the porch of his house, enough times to make half a mile, so he said. He wore a big Texas sombrero and carried a cane. His first automobile was an early Stanley Steamer, before the days of condensers, so that we swooshed down the road in a cloud of steam as well as dust. We had to stop at every brook, let down a hose, and fill up the boiler again to keep in operating condition. After the Stanley came a magnificent green Stevens Duryea with two swivel seats in the tonneau which seemed built especially for my sister and me.

As I grew older my world expanded to include the civic and shopping center on the south side of the tiny village green. One of my chores was to fetch home a five-gallon can of kerosene on my express wagon from Deacon Leffingwell's grocery store. But the real point of interest for small fry was Dana Carpenter's drug store and ice cream emporium, and Dana Carpenter himself. The ice cream dispensary would have been popular in its own right, but its interest for the younger set—not to say grownups—was greatly enhanced in the early years of the century by the presence of the village telephone switchboard, in full view and hearing of anybody who entered the store.

As in the case of the traveling salesmen we listened to around the livery stable, we missed the full import of most of what went on at the switchboard, but "Carp's" duties as local linesman for the telephone company were completely understandable. We were always on the lookout for his active figure around the village and if we
saw him pedaling off in any direction except toward his home, his pants legs reefed down with bicycle clips, we were likely to follow, hoping to have something of more than usual interest to watch. Telephone lines then were on a do-it-yourself basis, entirely unrestricted by laws and regulations. They ran from house to tree to barn to pole and crosslots in a mad pattern of improvisation. To locate and repair a line failure called forth all a man’s resourcefulness. Carp had to be prepared to climb trees, scale barn roofs, or, if everything else failed, install a rickety pole to keep the system in operating order.

In addition to his activities as drug-store proprietor, ice-cream-maker extraordinary and local telephone manager, Carp found time for a life-long study of botany, corresponding with others all over the world in the classic pattern of the amateur scientist. He also shared my father’s enthusiasm for photography, and the two spent many hours in the countryside enjoying and sharing their hobbies. Carp liked to tinker with electricity, in addition to his telephone job. And naturally enough, when the uproar over Halley’s Comet began to build up in the Spring of 1910 it was Carp who had the pictures and the diagrams and the information to make it all exciting and significant. On Sunday Carp sang in the Congregational choir, never aware, I’m sure, that he could not carry a true melody or produce a tone that did not sound like a she-bear in distress. But he enjoyed it so much nobody had the heart to tell him. His wife attended the Baptist church and always insisted that Carp’s singing had nothing to do with it.

What I have been describing exists now only in my memory, mine and that of a half-dozen others who for one reason or another were especially aware of their environment. The life I knew ceased in all important respects at least forty years ago and many of the village’s physical features have also disappeared. The hotel came to an end in the early years of the century. The Gray factory failed at the time of the First World War and was taken down. The business center went up in smoke one frigid January morning in the early 1920s and was not rebuilt. The old Buxton home was dismantled to save taxes after a long period of disuse and decay. Most of the people I have named are dead. Only one of the four Protestant churches remains in use. The Congregational parsonage, no longer needed for the non-resident minister, often stands empty. Several houses are advertised for sale, more could be purchased at modest prices. The modern age has dealt harshly with Middletown Springs. Yet the general appeal of the village is unimpaired. The hills maintain their vigil on all sides except to the south where they part engagingly. The Poultney River still slips clear and unsullied over its ledges of slate. The gracious trees, the quiet streets, the factory managers’ homes, the tiny green with its single white church—all combine in a continuing invitation to the modern generation to love and cherish and appreciate.
Boy Auctioneer

He sells hundreds of cows a year thanks to a smooth line and his father's savvy.

Story and photographs by Joyce R. Wilson

Professional symbol: Ray leans on his cane, the auctioneers pointer, prodder and prop after a hard day's selling.
Ray Camire at fourteen is Vermont's youngest licensed auctioneer, a profession he has been aiming toward since he first began watching his father deal in cattle at their home in East Barre.

At twelve Ray enrolled in the rigorous two-week course given by the Reisch Auctioneer School in Mason City, Iowa. There he spent his first three days concentrating on shouting a rhythmic but always understandable count, eventually fattening it with what professional sellers call fill-ins to make his chant more colorful.

"Say I start selling a heifer for $150," Ray explained. "Like this—one fifty-five-ah, one fifty-five-ah.' As the bidding goes up I'll put in some extra little fill-ins like 'don't pass her by-ah.' Makes it more interesting."

The course also taught him how to start a bid, an important part of auctioneering because starting too low or too high can throw the bidding off. Equally valuable is knowing when to stop the bidding and close the sale.

Nelson Camire, who has been a cattle dealer for fifteen years, acts as ringman for his son's auctions, giving the pedigree, milking record, weight or faults of each cow as it is led into the ring. He also spots surreptitious gestures used by bidders and passes them on to Ray as the competition for an animal gets hotter. He uses his showmanship to push for more bids, and he's usually the one who indicates when the bidding has reached its limit—although Ray is becoming increasingly adept at judging how much a cow is worth and what price she should bring.
THE FRENCH have a saying to the effect that
the more things change the more they become
the same thing, and old-time maxims seem to
embody the truth within their sententious phrasings, in no
matter what language they are found.

I have been led to these remarks apropos of a difference
of opinion which has arisen here in Vermont concerning
the making of stringed instruments. Henry Brant, conduc­
tor and composer who teaches at Bennington College,
had an idea for a whole family of violin-type stringed
instruments, of which there are to be eight members, all
of them proportionate replicas of the violin, with no one
of them corresponding exactly to any stringed instrument
now in use. His ideas received the support of George
Finkel, a virtuoso on the 'cello and also on the faculty at
Bennington. Russell Flagg of Rutland, who for a long
while occupied the first seat in the viola section of the
Vermont State Symphony Orchestra—but who is per­
haps more widely known as a maker of fine violins and
violas—submits that the idea is not a new one and that,
one once tried, these odd-sized instruments have been discarded
in the past.

It is an interesting story, and since it has to do with the
arts and with Vermont, it is proper subject matter for this
installment of V L Reports.

Is Russell Flagg right? Do all changes return in the end
to the same old pattern? Or are the innovators in Benning­
ton blazing paths which are truly new and which are su­
perior to the old? I shall not attempt to pass judgement;
I’m sure that time alone, if there is enough of it left to us,
will supply the answer.

Henry Brant’s idea started when it seemed incongruous
to him that in a string quartet there should be two identical
instruments, one playing the soprano part, the other alto,
with the viola as the tenor—when in actual fact, or so it
seemed to Henry, the viola was not even big enough to be
the alto. Then there was this great gap in size and pitch
between the viola and 'cello, with no real tenor in between.
So he got hold of a quarter-size 'cello and tuned it up to
something between the 'cello and the viola. He moved the
viola up to the alto part, and he was off.

It soon became apparent that this was not enough, and
that the whole system would have to be rationalized if
anything were to come of the idea. So Henry got in touch
with Mrs. Carleen Hutchins, a science teacher and house-
wife of Montclair, New Jersey, who was greatly inter­
ested in the physics of sound and who had taken to the
making of violas on the kitchen table. This new project
was a big undertaking, but with the help of a Guggenheim
Foundation grant Mrs. Hutchins was able to take it on.
She has been on the job now for three years, with five of
the projected eight instruments already finished.

I have seen and heard one of these instruments, the one
which most nearly corresponds to the 'cello, and which is
FINKEL AND BRANT: exciting future!

tuned the same. Mrs. Hutchins’ 'cello is a blonde instru-
ment, beautifully made, and quite a bit larger than the
conventional 'cello. As George played it in his living room
in Bennington on that cold and sunny afternoon, one could
not but be impressed by the large and sonorous tone,
especially on the C string. I gathered it took a bit of
muscle to play it, but the result was really good.

As matters now stand, Henry Brant has composed some
short pieces for the five instruments so far produced; also
suitable for their use is the chamber music of the Renais­
sance, which was largely composed for the viols. The
viols, which were invented in the Fifteenth century, passed
out of the picture in the Eighteenth (one cannot help but wonder why). At any rate, the only member of this family now remaining in use is the bass viol; but as Russell Flagg pointed out later, the violin is a descendant, as indicated by its name, meaning "little viol."

I can understand the appeal that a rationalized family of instruments such as this would hold for the modern composer, who must feel that his idioms are being constricted within the antique forms. As well I can understand how they extend the scope of the 'cellist. Three of this family of eight instruments would be played between the knees as is the 'cello, and since two of the new ones extend the range upward, now, with a slight modification of technique, the 'cellist can explore the whole range of viola and violin literature besides his own.

Now to jump from Bennington to Hinesburg, a small town which lies at the foot of the Green Mountains looking west toward Lake Champlain. Here in 1892 Russell Flagg was born into a musical family. His father, besides being a vocalist and bandsman, was a highly skilled artisan. He was the village blacksmith and he made beautifully wrought tools, for I have seen them and marveled at the perfection of their finish. It was natural that young Russell should take violin lessons and—when he saw the violins made by old George Granger of Rutland, who was his teacher's father-in-law—that he should also want to make violins. By now Russell has produced some one hundred fifty instruments, including a couple of dozen violas (of which I have one), so it occurred to me to ask Russell about the new instruments.

When I had finished describing the Bennington venture to him as best I could, he exclaimed, "Does he think he has a new idea there? The idea is as old as time, and has been done and done again." He spoke then of the Galbusera experiments in Italy in the 1850s, which according to Russell, included the making of a whole new set of violin-like instruments, although they apparently were built like guitars, without corners. I had not heard of these experiments, nor could I locate any reference to them, nor do I even know how to spell the word!

Russell went on to tell that in the time of Purcell the violin-maker made the instrument to fit the size of the wood he had available. It was Antonio Stradivari who, somewhat later, might be said to have standardized the design and dimensions of the violin as we know it today. Stradivari was continually experimenting. At any rate Russell Flagg is convinced that the standards set by the masters of Cremona will continue to prevail in the making of stringed instruments.

He argues that the traditional shapes and sizes have produced both the finest tonal quality and the greatest ease of playing; as for the experimental designs, in general, the larger the instrument the larger the tone, although this sometimes involves loss of quality as well, and the larger take more effort to play. Henry Brant, on the other hand, contends that difficulty of playing is not a serious objection, and that there is a whole new world of possibilities for music inherent in the new system. As a matter of fact, he would like to see the string sections of the present symphony orchestras augmented by a choir of ten of his tenor violins and ten sopranos. Wow! what would happen to the woodwinds?

Well, perhaps "Plus ça change, plus c'est la même chose." But let's not forget atomic fission. I can feel sympathetic to Russell Flagg's point of view, but at the same time it seems possible that the time for a breakthrough has arrived. Certainly in the near future the world will be hearing a great deal more about the Bennington Experiment.

_Russell Flagg: it won't work!_

_Russell Flagg_
DINNER ON THE WING

MRS. APPELEYARD'S recollections of eating partridge go back to the time when she was a débutante. Dressed in rose and ivory brocade and ancestral lace, she was confronted by menus like this, handsomely inscribed on gilt-edged cards and mentioning a suitable wine for each course:

- Oysters on the Halfshell
- Radishes
- Salted Almonds
- Olives
- Trout, Rochambeau
- Potatoes, Noisettes
- Sweet Breads au gratin
- Filets Mignons aux champignons
- Fresh Asparagus, mousseline
- Roman Punch
- Roast Partridge, Bread Sauce
- Chicory Salad
- Ice Cream, Chambord
- Camembert Cheese
- Coffee

On the whole such meals were some of the least interesting Mrs. Appleyard has ever eaten, and she is sure her son Hugh's partridge was much better than the Edwardian ones.

Luckily no one was standing near the window in Hugh's house when the crash came. He thought at first it had been hit by a hunter's bullet but, when he looked at the shattered glass on the floor, in the middle of the heap was lying a dead ruffed grouse. It had flown straight through the glass, breaking its neck. After sweeping up the glass and boarding up the window, Hugh asked his mother how to cook the partridge.

Her shelf of cookbooks, dating from the reign of William IV to that of Mrs. John F. Kennedy, proved as confusing as an income tax blank. None of the experts seemed to know what they were cooking—a New England partridge (which is a grouse), a western grouse (which is a prairie chicken), or an English partridge, which comes with a metal tag on it saying so but not giving away the secret of how to cook it.

Some of the writers said the birds should merely fly through the oven. (“Not one with a glass door, I hope,” said Hugh.) Others wanted them simmered for hours and then roasted. The cooks could not even agree about the color of the meat. Some said it was dark like duck. Others claimed it was white like chicken. They also said rattlesnake and rabbit and tuna fish were like chicken. Mrs. Appleyard feels that cooks should know what they are cooking.

“I'm going to drive down to River Bend and ask Mr. Colton, the Chief of Police,” she said. “He'll just be coming off traffic duty when I get there. I'm sure he'll know about partridges.”

In much less time than it would have taken to go through the rest of her cookbooks, Mrs. Appleyard was back with the Chief's instructions.

“The breast meat of a ruffed grouse, usually called a partridge though it's not one,” she reported, “is ivory in color, more like guinea hen than chicken. Legs are dark and tough with not much on them—you discard them. Hang the bird by the neck in a cool place four or five days. Pluck and clean it, make a rather moist stuffing, perhaps with a little finely chopped celery and apple in it. You are supposed to have one bird apiece.”

“How many picture windows does he think I have?” asked Hugh.

“Rub the birds well with butter inside before you stuff them,” continued his mother. “Then put a lot of softened butter on the breasts and wrap them carefully in aluminum foil. Without the foil, Chief Colton says, they get as dry as old pine chips. Don't overcook them. Put them on a rack in a dripping pan and cook them at 325 degrees for about half an hour. Then unwrap them, put them on a fireproof serving platter and run them under the broiler for a minute or two to brown them. The Chief says you really ought to have wild cranberry sauce with them. He knows a bog—”

“They—I mean it—will be garnished with green grapes and like it,” said Hugh firmly.

When the partridge was served four days later, Mrs. Appleyard tactfully supplied a good many breasts of chicken to keep it company. She also made bread sauce to go with both kinds of birds.

BREAD SAUCE

- 3 cups milk
- ¾ teaspoon nutmeg
- ⅛ teaspoon pepper from the grinder
- 1 small onion, stuck with 8 cloves
- ½ cup dry breadcrumbs
- 5 tablespoons butter
- ¾ cup coarse breadcrumbs
- Rolled fine

Put the milk, seasonings, onion in the top of a double boiler. Add the ½ cup of fine bread crumbs. Cook over gently boiling water for 30 minutes. Remove onion. Add half the butter and stir well. Keep warm. In an iron pan, melt the rest of the butter over medium heat. Add the ¼ cup of coarse crumbs. Toss and stir till crumbs are brown. Put the sauce in a bowl—Mrs. Appleyard likes it in a bright red one—and sprinkle the crumbs over it. The sauce should be about the consistency of whipped cream.

Mrs. Appleyard is glad to report that when the partridge was equitably divided by Hugh among the assembled gourmets, her fragment was not like a pine chip.
CONTINUING EVENTS


Until Oct. 30: Barre—Grannie Tours, 8:30—5.


Until Nov. 20: Reading—Historical Exhibits, Thurs. or as arranged.

Until Nov. 26: Bennington—Battle Monument. Sept. 1—Nov. 30: Black Bear Season.

U N T I L  O C T . 1 4 :  M a n c h e s t e r — S k y - Li n e D r i v e .

Note: All dates are inclusive. This data was compiled last winter, so is subject to change and not complete. Write Publicity Director, Vermont Development Department, for detailed information, supplementary free list and highway map.

S UPPERS AND BAZAARS


Putney—Village Fair, 11—5.


Sept. 5: Bristol—Chicken Pie Supper, 5:30.


Sept. 15: St. Johnsbury Ctr.—Church Sup. 5.


Sept. 26: Fletcher—Chicken Pie Supper, Sale, 5.

Sept. 28: Pomfret—Fair, Supper.

Sept. 29: Putney—Opportunity Sale, 10—5.

Sept. 3: Barnet—Chicken Pie Supper, Sale, 5.

Richmond—Bazaar, Chicken Pie Supper, 5 & 5:30.


Oct. 6: Pomfret Ctr.—Fair, Supper.

Oct. 8: Woodsville—Field Day.


Oct. 18: Fletcher—Harvest Supper, 5.


Oct. 26: Reading—Turkey Supper, 5.


Nov. 1—3: Rutland—Handcrafter's Christmas Bazaar, (Armory).

Nov. 7: Richford—Nickel-a-dip Supper, 5:30.

Nov. 10: Warren—Deer Hunters' Supper.

Nov. 11—13: Bennington—Antique Show, 10—5:30.

Nov. 17—18: Newfane—Hunters' Breakfast, 4—7 a.m., (Fire House), Coffee, Doughnuts, (Brookline School).


Nov. 24—25: Newfane—Hunters' Breakfast, 4—7 a.m., (Fire House), Coffee, Doughnuts, (Brookline School).


Dec. 2: Montgomery—Game Dinner.

Dec. 6: Manchester—Christmas Supper, 5.

Dec. 8: Londonderry—Christmas Supper, 3 & 5:30.

SPECIAL


Aug. 21—25: Bennington—Composer's Conference.


Sept. 8: East Burke—Field Day.


Sept. 30—Oct. 7: Forest Festival Week.

Sept. 30—Oct. 7: Forest Festival Week.

Oct. 5—7: Calais—Foliage Festival.


Oct. 6—7: Montgomery—Foliage Fest. Stowe—Foliage Festival Fly-In.


Oct. 12: Peacham—Fall Foliage Fest.


Oct. 20: Northfield—Norwich Parents' Weekend, Norwich—St. Lawrence Football.


Nov. 29: Montpelier—Bazaar, (Catholic Ch.).
Pictures, from Vermont anyway, sometimes understate the truth. Gene Coleman of Florida reports that fifteen minutes after his picture was taken (VL Spring issue) at Lake Bomoseen with a fine Northern Pike, he also had in creel four large bass.

New York State is harboring some Vermont real estate, thinks Boston College geologist, the Reverend James Skehan, as a result of his field work hereabouts the past 14 years. Dr. Skehan deduces the tops of the Green Mountains fell westward in a tremendous rock slide or overthrust, and came to rest on what is now the Taconics on the edge of New York. This land grab probably happened about 300 million years ago.

The state highway department announced early this year its intention to cut down some 1,000 trees along Vermont roads. An unspecified number were diseased anyway, they said, but the majority, apparently, were hazards to motorists errant. When it comes to a choice between people and trees, we'll take people, the department stated. Vermont Life suspects, on the other hand, that if a poll were taken among Vermonters, a majority might be found to prefer the trees.

Traveling south and west of Chicago it is possible to come upon the town of Vermont, Illinois, which descends, we find, from Dr. Abraham Williams, who in 1835 paid the town-lot purchasers a gallon of whiskey for the privilege of naming the town—in honor of his native state.

A displaced St. Johnsburian, Norman Atwood of Evanston, Ill., has discovered copies of Vermont Life in Chicago on sale at the Post Office News Company under a sign reading "Foreign." In the same emporium, however, Arizona Highways and Texas Quarterly are sold from under the counter.

Champion log-chopper and tree-feller at last August's Lumberjack Round-Up on Lake Dunmore, William Johnston, came all the way from Sydney, Australia to demonstrate the superiority of his Down-Under technique.

Misplaced G: In our Summer issue Vermont Boating Map the town of Grafton inexplicably appeared on the Wells River some 100 miles north of its accustomed location. Groton was intended.

Impaired Circulation: To help us cope with substantial postal rate increases now expected, our circulation manager begs subscribers to consider the assistance (in fewer expiration notices) that two and three-year subscriptions would give us. You will save also, 50 cents or $1, respectively.

Is photography ever art? The fine lines appear blurred, for an increasing number of amateur painters are coming forward with their renderings of photographs which have appeared in Vermont Life. This is all well and good—if the paintings are just for practice or personal pleasure. But when these "copy paintings" are displayed in art exhibits and offered for sale, we feel a dishonesty is being perpetrated upon the public, and a plagiarism upon the photographer. Vermont Life is flattered by such artistic notice, but is constrained to warn that such goings on could result in embarrassing and expensive legal repercussions.

A public official with great ability and pertinacity can leave his mark on Vermont. As proof, the Postboy exhibits a man who has accomplished wonders.

More than anyone now alive Perry Merrill, now director of forests and forest parks and constantly at it the past 43 years, has been responsible for the strides in Vermont forest conservation treated in Mr. Greene's lead article.

**Mystery Picture 23**

The first correct location of this mist-shrouded lake scene filmed by Geoffrey Orton, and postmarked after midnight of August 20th, will receive a special prize. Please use postal cards.

Our Summer Mystery Picture, photographed on the main street of Poultney, was first identified by Thomas Ryan of Weathersfield, Conn.

**TREE BARK QUIZ ANSWERS**

1—Basswood, 2—Elm, 3—Butternut, 4—Locust,
5—Oak, 6—Maple, 7—Beech, 8—Ash