

## **Wisconsin Academy review. Volume 27, Number 4 September 1981**

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# WISCONSIN ACADEMY REVIEW

Published Quarterly by the Wisconsin  
Academy of Sciences, Arts and Letters.



September 1981  
Volume 27, Number 4



## Second Thought about the Golden Bough

I don't make resolutions on New Year's Day, and in spring I just feel relieved that I've endured another winter. But fall always finds me full of vague, unarticulated hopes that this may be that perfect year.

I remember that as a teenager I pored over *Seventeen* magazine in August, planning for the new school year a mix 'n match wardrobe suitable for all occasions and new cosmetics that would cover any imperfections. I mentally added various resolutions about improving my character to go with the new look. The best thing about school was its completeness—when school was out in June that part of life was over. The next fall was a *tabula rasa*: friends, teachers, classes would all be changed and, logically therefore, I could change, too. I could become anything, I felt, as September spread its possibilities before me. New classes opened new ways of life. In college it was possible to play many roles, to experiment with a new lifestyle each fall. Seeing fall as a chance to start over has stayed with me, since I've always lived in an academic community. And now I can share the excitement of my children about each bright, untarnished, unblemished school year.

I know that spring is unquestionably the symbol for renewal, certainly in the Christian world. When new vegetation sprouts up from the dead, the archetype is convincing. But it's September that fills me with the expectation of a new and somehow better life.

—Patricia Powell

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## Authors and Artists

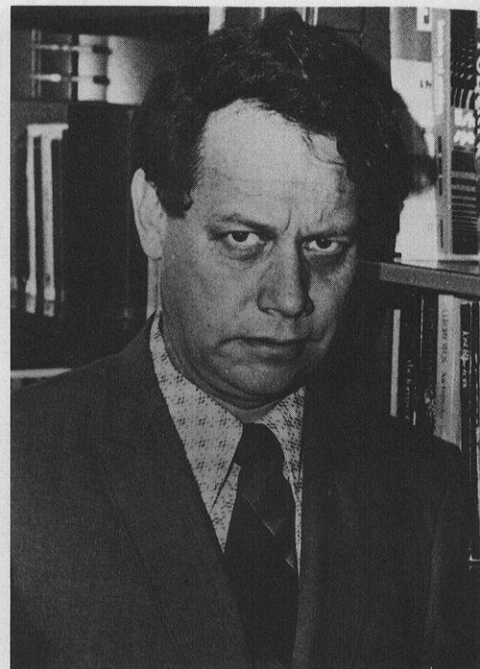
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Several months ago we got a letter from longtime member Howard Mead. The publisher of Tamarack Press, *Wisconsin trails*, and the recently acquired *Wisconsin Weekend* offered us a color plate from Jerry Apps' and Allen Strang's attractive *Mills of Wisconsin and the Midwest* (Tamarack, 1980). Because of his generous gifts of separations, we have occasional color covers such as this one by Allen Strang, September 1977, and March 1979. An excerpt from the narrative by Jerry Apps appears on page 3.

Gwen Schultz



**George Gott** teaches composition, creative writing, and contemporary poetry at the University of Wisconsin-Superior. His poetry has been published in numerous magazines and anthologies.



George Gott

**Gwen Schultz** of Milwaukee and Madison, a geography professor and free-lance writer, has contributed articles and poetry to the *Wisconsin Academy Review* in the past. Her short story "Return of the Wolves" which appears in this issue won first place in a national contest of the National League of American Pen Women. Its setting is Alaska. She has done research there, and her interest in cold regions led her to write three books on icy subjects (*Glaciers and the Ice Age*, *Ice Age Lost*, and *Icebergs and Their Voyages*), among other books. She has worked with several departments at the University of Wisconsin in Madison, and is currently with the Wisconsin Geological and Natural History Survey. Ms. Schultz is a vice president of the Council for Wisconsin Writers.

**Randall Rohe** was born in Neenah, Wisconsin, and received his B.A. from Carroll College in Waukesha. He took his M.A. and Ph.D. from the University of Colorado in Boulder. Mr. Rohe has taught at the University of Colorado in Boulder, Nicolet College, and UW-Green Bay. He has written several works dealing with the historical geography of Wisconsin lumbering and continues research on this topic.

**Elizabeth Goepel**, a native of Waterbury, Connecticut, has lived in many places in the US and abroad. She received her M.A. in journalism from UW-Madison in June of 1981 and plans to continue living in Madison and writing.

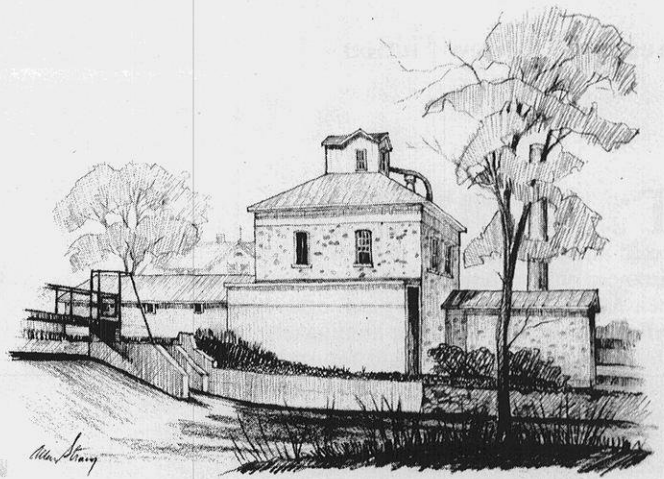
As a science writer for the University Industry and Research program, Ms. Goepel interviewed the scientists from the UW Materials Science Program. Her interest aroused, she conducted further research and interviews which resulted in "From Computers to Space Invaders."

When **Katherine Ely Ingraham** went to college (B.A. 1922), the art education department at UW was small and limited; she had to learn printing at the school of engineering. For two winters she studied in New York at the Art Students' League under Joseph Pennell, where she learned etching, a process that would occupy her energies for the next fifty years. Through Pennell, she was able to purchase a 1000-pound Sturgis press, which she operated for forty-eight years in the basement of her Madison home and is now part of the UW-Madison art department's printmaking program.

continued on page 40

Excerpts from  
*Mills of Wisconsin  
and the Midwest*

By Jerry Apps and Allen Strang  
Tamarack Press, 1980



*"The Attraction of Mills"*

The Jaeger Mill is more than a century and a quarter old—it was built in 1854—but it has aged remarkably well. True, it has an occasional loose board and it could take a coat of paint. But it stands sturdy and strong, a symbol to the community of an earlier day when its machinery hummed and clacked, sometimes round-the-clock if orders demanded.

Inside we meet Ed Jaeger, a tall, slim gentleman who tells us he has worked in this mill since he was a small boy when his father owned and operated the place. Jaeger speaks in a soft voice about the early days of the mill, almost as if he doesn't want to waken the sleeping old building. (The mill has not operated for more than ten years.) Proudly he shows us the equipment, the three run of millstones that are well over one hundred years of age, the four sets of dust-covered roller mills manufactured by the E.P. Allis Company of Milwaukee. (In 1901 the Allis Company was one of four firms that merged to form the Allis-Chalmers Company.)

• • • • •

Jaeger's memories of the days when he helped his father and learned the milling business are many. Today he sells feed but does no milling. As we talk it is obvious that Ed Jaeger loves this old mill and the valley, and the Crawfish River.

Old mills, often several stories tall, sometimes falling apart here and there, have a certain appeal. Soft gray shades of aging, faded wood contrast with bright blue millpond water. The creaking of massive pegged timbers contrasts with the liquid sound of water rushing over the milldam.

For many, old mills symbolize America and the development of the frontier—the pioneers' westward movement into territories that later became states, onto virgin lands that became wheat fields, into pine and hardwood forests that supplied logs for the screaming saws. Mills recall an era when people had time to visit with their neighbors as the millstones ground their grain into flour.

Mills also represent two basic elements in our lives, food and shelter. The flour mill provided the primary ingredient for bread, the "staff of life." The sawmill, a relative newcomer (flour mills operated thousands of years before sawmills were invented), provided raw materials for houses, barns, schools, churches, and factories. A community wasn't really established until the flour mill had been completed. Along with the church and the school, the flour mill was viewed as a community institution, a building in which everyone had an interest.

It cost many times more to build a flour mill than a school or a church. The mill was usually privately financed, an arrangement that sometimes presented difficulties. In the early history of White-water, Wisconsin, the flour mill was to be constructed on Section Four. The first owner of Section Four did not build a mill and sold his claim right to another immigrant, who also made no move to build a mill. When the wheat and corn crops were harvested, the problem became acute. The settlers needed a mill. They held a meeting and resolved that because a mill was needed and because the Section Four site was the only feasible location, the claim holder of Section Four must build a mill or sell to someone who would. If he refused to do either, "*he should be run*

*off the claim!*" A deadline was set and a committee appointed. The claimant could not build, so the committee sought out an investor to buy the land and build the mill. By the following June a new mill was in place.

• • • • •

Millponds, too, were attractive and useful to communities. They were popular fishing places year-round, and a corner of the pond was often saved for ice-skating. While your father waited for his grain to be ground, you could clamp ice skates on the bottoms of your shoes and make a few turns on the smooth frozen surface.

Before the electric refrigerator, millponds were the source of the villagers' ice supply. Late in winter, when the ice was thick, the ice cutter sliced it into chunks, which were hauled to a huge icehouse on the pond's edge. Sawdust was packed around the ice chunks to insulate them. In summer, the iceman made his rounds with the blocks of ice for the villagers' iceboxes.

In case of fire in the village, the millpond was a natural water reservoir. Not many years ago a Wisconsin community drained its pond after the mill closed. The citizens debated about dredging the pond's bottom so they could once more fill it with water and turn it into a recreational site. But they couldn't agree on how they should finance the effort. Then a local business, located not far from the pond site, caught fire and burned. The firemen complained they didn't have enough water for fighting the fire. Soon after, the community voted to fill the pond, without waiting to decide how to finance dredging the bottom. □



## Academy Review Fiction

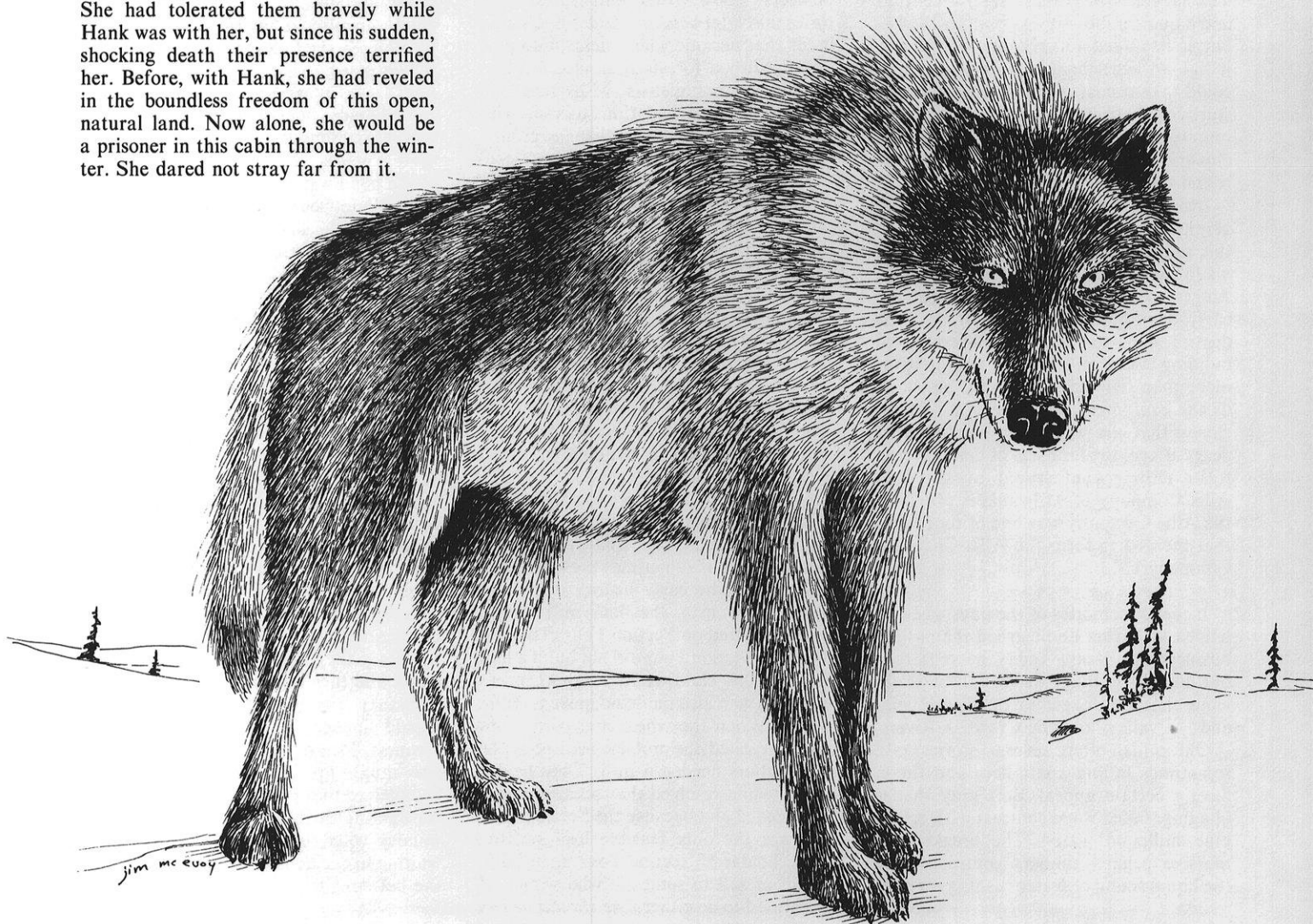
**T**hey were coming back—the wolves. Her ears, ever tuned for them, detected an occasional howl or bark in the distance, on the tundra flat. She knew their habits. They would be gone for two or three weeks, roaming their hunting territory, but always they would return to their favorite haunt, a sheltering rock ledge just over the nearest hill.

Carrie Hanson pulled a jacket over her checked shirt and stepped out onto the porch of the one-room log cabin. She would absorb some beneficial afternoon sunshine while the outdoors still felt safe. Later, after the wolf pack returned, she would venture out only with great caution.

Nothing about this Alaska wilderness had ever frightened her, except the wolves. She had tolerated them bravely while Hank was with her, but since his sudden, shocking death their presence terrified her. Before, with Hank, she had reveled in the boundless freedom of this open, natural land. Now alone, she would be a prisoner in this cabin through the winter. She dared not stray far from it.

## Return of the Wolves

By Gwen Schultz, Copyright© 1981



Her only companion and protector now was her dog, Guard. He was standing tensely alert below the porch, facing the direction of the wolf calls, sniffing the wind. Thank God for him! Without him she would panic. Without him she could not emotionally endure the coming dark, frozen winter and those prowling animals.

She counted the months ahead. This was only October, but here winter arrived early and commandingly. Already accumulations of snow covered half the ground.

"Guard, come up here," she called, wanting her dog close. Her voice was soft, as though the keen-eared wolves, however far away, should not hear.

Hank had acquired Guard as a pup in Anchorage four years ago, just before he and Carrie headed north into the interior. Guard was a mixed breed. "Part native," the owner had said. Whatever the mixture of strains, it was a good one, giving the dog the spirit and fortitude needed to thrive in this harsh, competitive environment.

The small, slim middle-aged woman seated herself on the porch bench and slung a trousered leg and scuffed boot up onto the rail with a falsely confident air. Meant to fool whom? No one—except Guard perhaps. He must not sense insecurity; he must remain sure and masterful.

She has taken to talking to herself in recent days, and naturally, she talked to Guard a lot too. Even a one-sided conversation created an artificial feeling of normalcy for them both.

"That's right. Lie here by me," she said quietly to Guard. "Plenty of time to worry about wolves later, when we have to."

Guard strongly resembled a wolf in appearance. There could very well be wolf blood in him. The seeming kinship undoubtedly helped him defy the wolves' constant threats. Yet, he also looked much like a German shepherd dog. His body was lithe and muscular. The hair of his back and of his long, full tail was a rough gray-brown. That of his underparts was lighter in color, and his forelegs and paws were white.

In this contemplative moment Carrie wondered, "What mysterious dividing line distinguishes a wild wolf from a tame dog?" So alike, yet one is foe, the other friend. She let her mind meander back through countless animal generations to the time, thousands of years ago, when the bloodlines of wolves and dogs were still intermingled. How did they separate? She imagined scenes of primitive early people, hunters and food-gatherers,

living in the open. Somewhere, sometime, a few of the wild creatures crossed the dividing line, feeling an affinity for the people and starting a friendship pact with them. In the beginning did those animals perhaps scavenge meal scraps discarded by the people? Were they attracted by the tempting smell of cooked meat? Were baby pups taken as pets, and, when grown, did they feel instinctive allegiance to the human group as the wild animals did to their pack?

However domestication of dogs began, Carrie was glad it had happened. She was sure Guard would never desert her. His loyalty was too strong, his animosity toward the wolves too intense.

Just now Guard's interest was diverted from them. Lazily he licked his front white paws clean. Then he rose and put them and his long, black-tipped, whiskered snout on her lap, as he often did, looking up at her devotedly, asking for affection. She patted his strong shoulders and fingered his hair. It became extra thick this season of the year as the temperature dropped.

"Your hair is so heavy around your neck," she said, "that your collar is lost in it." Her fingers finally found the leather collar and fondled it. It was a sentimental link with Hank, for he had made it. Hank, who had been her whole life—mate, provider, defender. He had had a compelling urge to penetrate this empty country and be self-sufficient by hunting, trapping, and prospecting. She, loving him, did what wives so long have done—gone where their man wants to go.

He chose this setting for their home, the level, partly wooded terrace along the clear creek. The creek was tributary to a larger stream that flowed to a settlement where they went by boat several times during the summer for supplies and socializing. Rapids deterred them from going oftener and discouraged people from visiting them. Only rarely did anyone come by and never after this time of year. Hank was exhilarated by this isolation and its dangers, by living far from help on the knife-narrow edge between life and death. He never suspected death was so close.

The last folks to come each last fall were a clergyman and a trader traveling together. The trader brought mail and provisions from the settlement, and collected animal skins and furs to take back with him. The visitors checked to see that everything was all right and then they were on their way.

They had stopped there just a couple

Loyal Guard sat beside her, relaxed by her petting and the low sun's horizontal rays warming his flank. He was gentle; yet when peril threatened he became fierce. He was not only protector, but challenger as well. No other animal had ever dominated him. Before his unyielding stance and fearless attack all encroaching animals fled, including the wolves. He was one antagonist the wolves persistently tried to overpower but never could. She believed they would kill him if they ever had the chance.

This plot of ground that Hank had cleared was originally the wolves' territory, and by nature's law surely they felt it was still theirs. No matter that Hank had cut the scattered trees from it and ripped out the thickets of willow and alder shrubs. Or that he had used the logs to build a sturdy cabin there, and stones from the ground to make its fireplace.

Hank had also built the necessary cache, a miniature log hut perched high off the ground on tall poles. In it emergency provisions were kept.

Regularly the pack came to patrol "their" area, usually at dusk or in the night. They would gather on the thinly wooded hill overlooking the clearing—about a dozen of them. Then the leader would start down among the shrubs, and others would slink after him single file, tails down close to their hind legs. In the clearing they would investigate everything and leave their marks.

Whenever Hank saw them coming near he would take a rifle and stride defiantly toward them. Guard would chase them, barking incessantly. They would snarl, showing their white jagged teeth, but would quickly retreat from the combined defense of the dog, the big man, and the weapon that killed.

Hank occasionally succeeded in shooting a wolf despite the animals' cunning maneuvers and the shadowy light they of weeks ago, when Hank was apparently in robust health. But then he had hurried with the strenuous job of sawing up tree trunks and branches, and hauling the winter supply of firewood to the cabin. He overdid, and a heart attack killed him outright. Carrie and Guard were the only one who knew.

Carrie looked with grief at the long mound of rocks under which she had buried her husband in a shallow grave, and her whole being ached. "I'll have him moved to a proper grave," she said aloud to herself. "Next spring when I leave—if I last that long."

The wolves had been away when Hank died. Would they become more aggressive now when they sensed he was gone?



moved in. A wolf fur brought a good price at the settlement. He would skin the wolves he shot and nail their pelts on the cabin wall to dry, beside other furs and skins, high enough so animals could not reach them.

Sometimes Hank and Guard were away when the wolves came. Then Carrie could call them home by ringing a bell that hung by the cabin door. Its sound traveled far over the quiet land. As she waited alone she would watch from indoors behind the curtain, shuddering, as the wolves explored around the yard. They would stop at the cache, smelling up at its unobtainable contents, and inspecting the useless ladder. They would come right up to the cabin and look up at the furs of their family members hanging on the wall like a warning. Were they antagonized by that? Did they look upon Hank, the person who did the killing and who worked the skins, as an archenemy?

She herself never acted against the wolves. Were they aware of that? She hoped she would never have to use a rifle any more. Her vision was not as clear as it once was. From a distance she would probably miss, and close she wanted never to be. "Best just to avoid them and stay inside while they are about," she told herself. "Wolves cannot unlock doors."

She had heard it said that wolves do not attack people, but she did not believe that, not after watching their sinister movements, and not after seeing what they did to prey as large as caribou and moose.

Guard used to sleep in the cabin's rear entryway at night. He was acclimated to the cold. But since Hank was gone she kept him inside the cabin, right with her.

Carrie noticed that gray shadows from the hill were already creeping over the cabin. Night was lurking on the horizon. Now at this high latitude days shortened rapidly. "Time to go in," she said to Guard, and he followed.

Her supper would be simple, and Guard would eat later. Leftover sourdough muffins had been warming on the range. She spread them thickly with wild-strawberry jam, reminiscing how she and Hank had gathered the small berries, a few at a time. Hot water was bubbling for tea. Milk was in an opened tin can on the windowsill. Through the frost-framed glass panes she looked searchingly toward the hill. "Guess I need the binoculars." She took them off the hook where they hung and focused into the gray distance. Sure enough. The wolves were back. She could see some young ones cavorting on

the hillside. The rest would be nearby.

She lit the wick of a kerosene lamp and whispered, "Safe for the night."

In her cabin haven her courage was high. Of course she could survive the winter. Why not? She was physically well and had everything she needed. She feared no human stranger's coming at this season of isolation. No one would come to this desolate, unmapped spot until the pastor and trader made their first spring circuit.

No matter that the nights would lengthen, the weather would turn frigid, the snow would increase. She would get by. Hank and she had stocked up on food for the both of them, so there was more than enough for her alone, and for Guard. She had canned some things, and the cupboard was full. In the cache was an abundance of preserved meat and fish cut in portions that were ready for thawing and cooking anytime during the winter. There were jugs of water in the cabin, and even when the stream froze solid, ice could be chopped from it, and snow could be collected. Firewood was piled next to the back door, and more was stacked alongside the cache. If the worst happened, if the cabin burned, she could survive in the cache, which also held blankets, warm clothing, and a small stove.

It was only the wolves she had to worry about. Even when the pack was off roaming she still felt insecure, because sometimes she had found paw prints of a single wolf on the ground or snow near the cabin. Perhaps they were those of a lone wolf who had been outlawed from the pack, or who had left it rather than be subservient to a leader.

One time at twilight when she had stepped outside she was startled to see a wolf standing still in the yard—head hung low, looking directly at her. Quickly she ran inside.

Sometimes in the dead of night Guard growled or broke into furious barking. And once on a full-moon night she had looked out the window and plainly seen Guard and a wolf confronting each other, circling, kicking the ground, their hair bristling on their shoulders. They were an even match. There was snarling contact, and biting toward the throat. But that was when Hank was still there. He opened the door and yelled, and the interloper streaked off into the eerie moon shadows.

To banish such spooky thoughts Carrie picked up her sewing. She was making a patchwork quilt from Hank's clothes. Nights felt colder without him and she

might need another cover on the bed. Before long, however, her eyes became sore from squinting in the limited, flickering light, and she put the sewing aside.

It was completely dark outside now, but too early for sleeping. She turned back the bed's down-filled quilt and fluffed the two pillows. She wound the bedside clock. Its ticking was friendly and assuring. Near the fireplace, where a low fire burned, she started undressing. She took off her shirt and then dropped her voluminous nightgown over her head, letting its hem fall to the floor. She had made the gown of brightly flowered, cotton flannel, which was now faded from many washings. It hung loose like a tent from her shoulders, and she kept her arms inside it until she had removed her trousers and underclothes, thus keeping her body warm all the while. Then she pushed her hands out through the sleeves. In front of a square wall mirror she let her hair down and combed it smooth. Having shed her mannish attire she felt feminine again . . . and more vulnerable.

Loneliness at this time was painful. The only one who cared about her any more was Guard. Now he was becoming restless, going to the door and whining to get out. Maybe it was necessary.

Carrie opened the heavy door just enough to let him through. A wedge of cold wind cut past her. "Hurry up," she called, but as she waited he wandered out of her sight.

"Guard, come back! Do you hear?" He did not come, so uneasily she closed the door. "If only he doesn't go near the wolves."

It had been quiet over at their hill except for an occasional mournful yowl. She listened. After a nervous interval she heard raucous barking there. "I'll bet Guard provoked that." Scrapping sounds moved closer in her direction. The wolves must be driving him back. Through the frosty window she could faintly discern animals scuffling among the leafless shrubs in the whitish light of a waxing moon. Shivering, she opened the door part way and rang the bell insistently.

"Guard, come in here!" she called over its metallic clang. He still was not coming, so defensively she closed the door again and hurried back to the window, straining her eyes to catch a glimpse of him.

The bell must have scared the wolves for they withdrew. With a surge of relief she spied Guard coming home. He appeared exhausted and wary, walking slowly and looking back toward the hill every few steps. When she opened the door he paused, as though expecting to be scolded.

Instead Carrie welcomed him wholeheartedly, being overjoyed to see him alive. "Thank Heaven you're back." As he passed her his nose carefully noted that she was all right. Still unsettled and panting, he inspected the corners of the cabin.

"Everything's all right now, Guard," she reassured him. On his plate she put a large chunk of meat. He gulped it down and lapped eagerly from his water dish. Gradually he became calm. His full stomach, the smoldering fire's warmth, and the exhaustion of the fight caused him to relax and lie down on the cool floor, but his ears remained perked and his eyes half open.

After a final survey of the yard Carrie closed the curtains for the night. At times the wind howled wolf-like around the cabin, but all was snug and peaceful inside.

She turned the lamp wick down to provide just a cozy glow, and in her long nightgown and slippers sat in the high-backed chair before the fireplace. She placed two more logs on the low flames. Their sputtering startled Guard momentarily. He jerked up his head, but then spread his jaws in a wide yawn and contentedly began licking his paws.

"Yes. You'd better clean your pretty white feet," admonished Carrie. "They're covered with mud. Tomorrow I'll give you a whole bath—which you need after tangling with those smelly wolves. But I love you anyhow." She held out her hand and, responding, he came and sat beside her chair.

As she stroked his head she felt a damp spot. She looked at her hand and bent close to his face to see it better in the firelight. "There's blood on you. What a fight you must have been in! Poor dog. Let me wash your face."

She moistened a rag in the warm water on the range, and despite his drawing back she held him tenderly and bathed the blood away.

When she sat down again he rested his snout on her arm. His eyes, agleam with the fire's orangeness, looked into hers. He was battle-weary, but he would have his pep back in the morning. In a moment she would blow out the lamp and climb into her soft bed, but just for now it was soul-comforting to feel him near, protective and strong.

She patted Guard's muscular shoulders affectionately and scratched behind his ears as he liked her to do. Her fingers probed through the hair around his neck, feeling for the buried collar she loved to touch, but they could not find it.

"You didn't lose your collar in that

fight, did you?" she asked sadly. "Oh, my, you did." How quickly the traces vanish. She regretted that his thick winter hair felt virtually unworn, as though the collar had never been there. The absence of even that vestige of the memento's existence added to her sorrow.

A pang darted through her. Carefully, with slow movement, she reached for the wet rag again and bent to wash Guard's forelegs and paws. Her hand began to tremble. The mud was not washing off. The legs and paws were naturally brown, not white. They were not Guard's. The rag dropped from her hand.

Ever so slowly she drew upright in her chair. She nervously straightened the skirt of her nightgown and then sat perfectly still, breathing shallowly over pounding heartbeats, pondering. . . . □





# From Computers to Space Invaders the inside story of electronic materials

*Everybody wants faster, smaller, more efficient electronic devices. At UW-Madison researchers are working to achieve this.*

By Elizabeth L. Goepel

**"If the price of cars had gone down as much as the price of computers, a new car would now cost half a cent."**

Before a check can be cashed, ink must be applied to paper. The process is so ordinary that few persons will ever ponder the arrangement of atoms in their check-books. But when, as in a TYME Account, information is electronically conveyed to a bank, just a few misaligned atoms in electronic hardware can foul messages that process thousands of dollars daily. At the University of Wisconsin-Madison, scientists from several disciplines have joined in an effort to probe the all-important atomic structure of the materials that make up TYME machines and other electronic products.

The impact of such research is pervasive, and much of it unseen. Like lightning penstrokes, electrons coursing through minute configurations of silicon, gold, and other materials can carry enough information to run an entire banking system. Speed, miniature size, and low cost have made electronics indispensable to American industry—therefore to the American economy.

Electronics, like most technological innovations, has expanded society's destructive and constructive capacities. The weapons industry as well as the communications, oil, aerospace, and medical industries depend on electronic instruments. It is almost impossible to avoid products that either have electronic parts or were made by industries utilizing electronic processes. Television sets and radios are built around electronic circuitry. Microwave ovens, photocopy machines, and digital watches run on electronic components.

But the proliferation of computers is one of the most controversial and obvious results of research on electronic mate-

rials. Thirty years ago, the few existing computers were gigantic and expensive machines with millions of tubes that kept burning out. Today, anyone with ten dollars can buy a pocket calculator.

"If the price of cars had gone down as much as the price of computers, a new car would now cost a half cent," says Giorgio Margaritondo, a UW-Madison physicist who studies electronic materials.

The difference came when researchers discovered how to use the electronic properties of certain materials to build tiny devices that perform the work of thousands of bulky vacuum tubes or mechanical parts. These transistors, resistors, and other switching mechanisms consist of microscopic junctions between materials such as metals and silicon, the main ingredient of sand and glass. In various combinations, the devices constitute the working parts of electronic products. Research in electronics, therefore, has focused largely on the peculiarities of a number of electronic materials.

## Materials sciences

The work of several scientists within UW's Materials Sciences Program illustrates the type of basic research that has helped produce millions of items from Space Invaders games to the Space Shuttle. The degree-granting program is administered through the College of Engineering but includes the voluntary participation of physicists, chemists, and other scientists within the university. As a result, the program is not confined to electronic materials and does not encompass all the research on campus that pertains to electronics.

The electronics-oriented research within the program descended in part from early industrial ventures into electronics—some of the first materials research took place in the 1930s and 1940s at Bell Laboratories, which came up with the transistor in 1948. A decade later, researchers at Texas Instruments and Fairchild Company independently invented the integrated circuit, which launched an avalanche of cheap, commercial electronic products by greatly increasing the efficiency of electronic manufacturing techniques. Instead of manufacturing separate transistors and wiring them together to form more complicated circuits, researchers built several sets of devices on one silicon wafer, thereby integrating the circuits. A two dollar integrated circuit would cost one million dollars if each part were made separately.

Since then, the drive for smaller, faster, more reliable electronic components has spurred industrial and government support of basic research on electronic materials. As more is known about the characteristics of electronic materials and how they affect each other, more efficient devices can be made. The findings in materials research may sound obscure to someone not accustomed to dealing directly with atoms, but each increment in understanding can be used to build better toys, tools, or weapons. Research on materials often means finding out what one atom is doing to another atom—not a simple task, but one UW scientists regularly undertake.

### Realms of silicon

The materials used in electronics are classified as metals, semiconductors, and superconductors, according to their ability to conduct electricity. Integrated circuits, for example, are made when metals such as gold and chromium are heated until they become a metallic mist. The vaporized metal is then allowed to condense along prearranged patterns in a treated semiconductor, usually silicon. The process involves hundreds of steps at microscopic dimensions. Superconductors, rarely used in industry, are metals that become extremely good conductors of electricity when very cold. They can be used for electronic devices but, because they need refrigeration, are presently used in only highly specialized products. Researchers in the Materials Sciences Program study these commercial and experimental materials using a variety of tools, themselves products of electronics research.

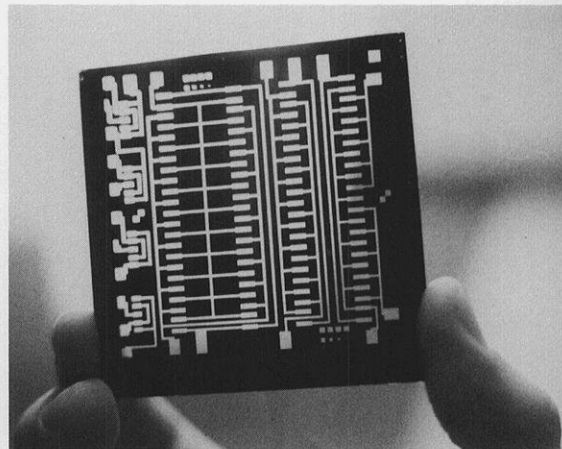
### Electron guns and photon beams

Although silicon and the constituents of other semiconductors can be extracted from nature, most manufacturers use artificially produced semiconductors to ensure good quality. At UW, metallurgical engineer Max Lagally examines the structural defects in these semiconductors with an electron gun, a common device found in most living rooms. (It is an electron gun in the back of a television set that fires a beam of electrons across the screen, row by row. The electrons hit phosphorus particles on the screen, and the screen lights up. The process is repeated across the screen so rapidly that a moving picture results.)

In a similar procedure, Lagally shoots electrons at small samples of a semiconductor, such as gallium arsenide. Electrons from the gun hit atoms on the sample, knocking electrons loose from the sample's atoms. By analyzing the distribution of these electrons, Lagally can discern how atoms are arranged in the sample. A few uncooperative atoms can lower the quality of a semiconductor to a point where it may be useless.

Lagally also bombards semiconductors with atoms of various materials to form thin films on the semiconductors. In electronic devices, these films connect metallic strips to wires that eventually connect each tiny component to the outside world.

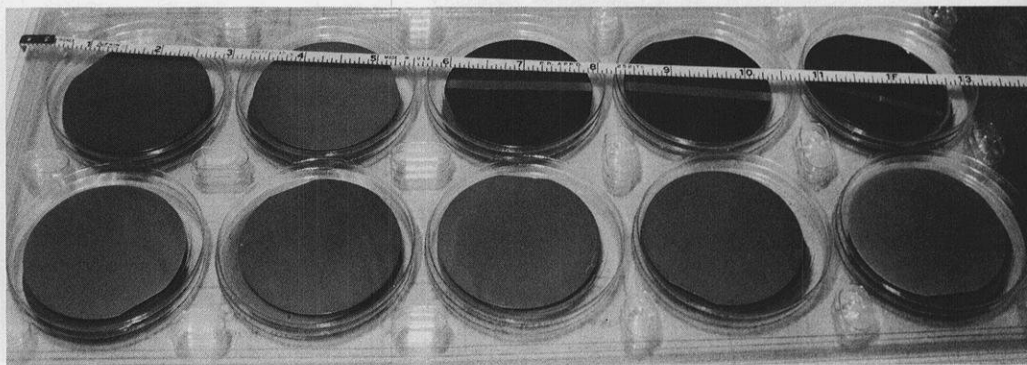
Other members of the Materials Sciences Program subject semiconductors and films to a beam of photons—particles that make up light, radio waves, x-rays, and the rest of the electromagnetic spectrum. Using a photon beam, Margaritondo and Leonard Brillson of Xerox Corporation recently discovered a way to control certain processes that occur when two materials are bonded together in the manufacture of circuits.



This pattern will be reduced thousands of times and etched into a piece of treated silicon.

Some of the first materials research took place at Bell Laboratories, which came up with the transistor in 1948.

Silicon wafers before processing. Millions of devices will be made from each three-inch wafer.





The difference came when researchers discovered how to use the electronic properties of certain materials. . . .

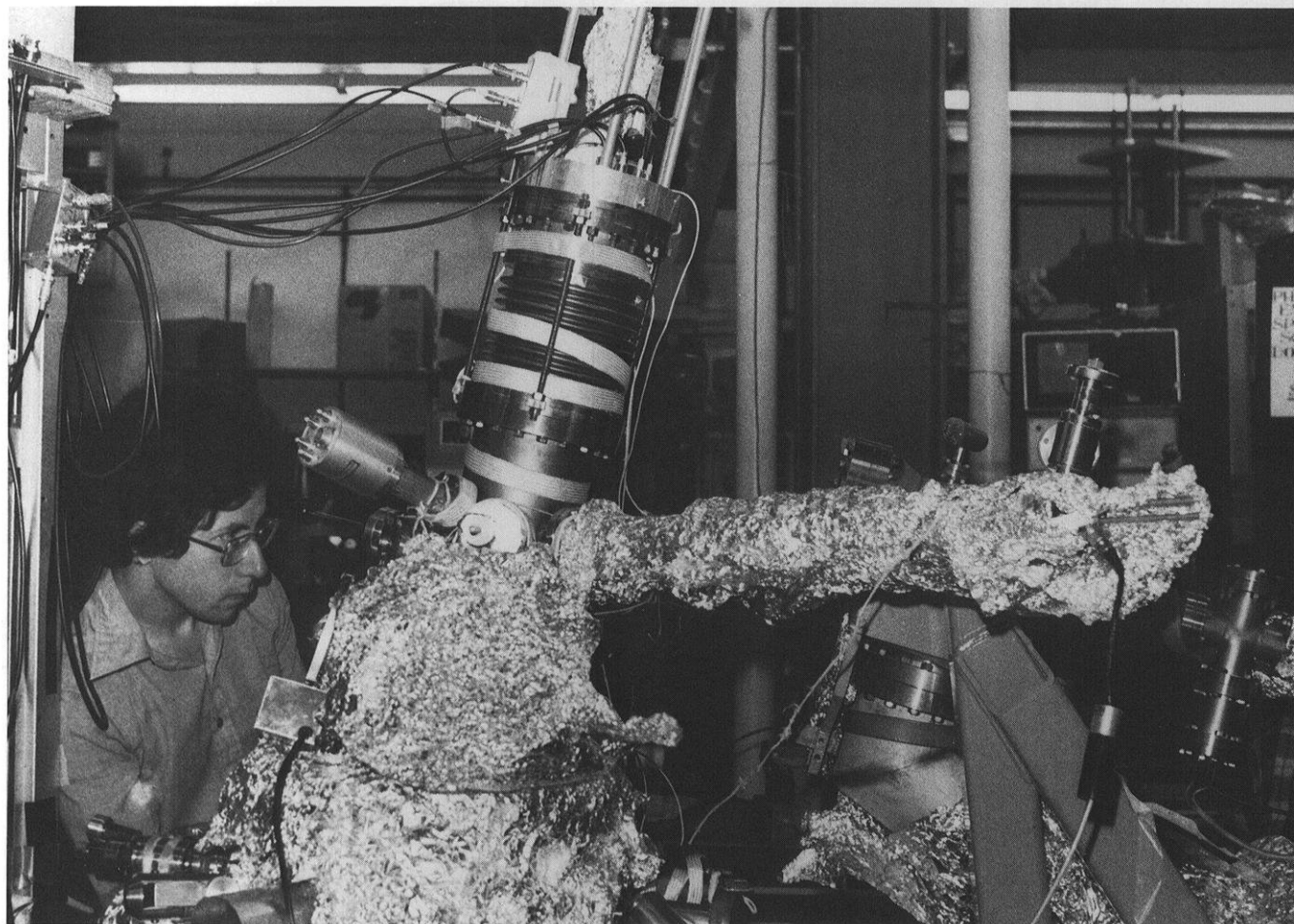
The source of the photon beam is an electron storage ring—a stainless steel doughnut that fills a large room at the university's Synchrotron Radiation Center, a part of the Physical Sciences Laboratory in Stoughton, Wisconsin. Electrons are forced to travel around the doughnut at nearly the speed of light. As they speed around the curve formed by a magnetic field, the electrons give off photons, somewhat like beads of sweat flung from a spinning ballet dancer.

A stream of these photons traveling through a stainless steel tube is aimed at a sample of material placed inside a vacuum chamber. As the photons hit the surface of the sample, they knock out electrons. The electrons are analyzed to reveal the electronic properties of the sample material. The storage ring at Stoughton, soon to be joined by a more powerful ring, is one of the few of its kind in the world.

By examining sample materials with the photon beam, Margaritondo and Brillson found that a few aluminum atoms placed between the junction of gold and gallium arsenide dramatically altered the characteristics of the junction. The photon beam showed that similar changes occurred within several other combinations of materials. These discoveries may permit electronics manufacturers greater control over the characteristics of electronic devices. It's like experimenting with grapes to produce many types of wine.

Silicon, the commercial semiconductor people unknowingly encounter every day, has also come under the scrutiny of the photon beam. Physicist Alfonso Franciosi has found that certain hard metals such as chromium react violently with silicon to form highly conductive compounds. As the photon beam reveals more about these compounds, they will be used to the advantage of circuit makers, most of whom want to mass-produce smaller, more efficient devices.

UW Synchrotron Radiation Center. This vacuum chamber is attached to the electron storage ring. A photon beam from the ring travels through a stainless steel tube to the chamber in which a small sample of material is placed. The photon beam reveals electronic characteristics of materials such as silicon.



## Circuits in wonderland

Mass production of smaller, high-quality integrated circuits also depends on how well manufacturers can etch tiny lines into the thin films with which silicon is covered in the processing of most integrated circuits. Lines are etched to mark the patterns onto which metal will be condensed. First, however, the thin silicon wafers—about three inches in diameter—are heated to produce a layer of silicon dioxide, literally rusted silicon. Dust-free machines coat the treated silicon with polymer films called photoresists. Intricate patterns imprinted on glass slides are then photographically reduced thousands of times and etched into the coated semiconductor.

Conventional etching techniques, however, blur the lines at dimensions smaller than one millionth of a meter, or one micron. UW chemist James Taylor uses a type of x-ray known as soft x-rays from the storage ring to etch sharply defined patterns at submicron dimensions. The storage ring makes possible sophisticated research on the response of various photoresists to soft x-rays and other radiation.

A different approach to the same problem is taken by electrical engineer Henry Guckel, who runs one of the few fully equipped integrated circuit laboratories owned by a university. In a delicate process, Guckel etches submicron lines with chemicals. Both Taylor and Guckel note that new theories are needed to explain the behavior of silicon at very small dimensions.

## Super glue and super cool

Not all integrated circuits are mass produced, however, and not all electronic devices go into integrated circuits. Electrical engineers John Wiley and James Nordman work on techniques to develop unusually sensitive and rugged devices, among them, silicon pressure sensors that will hold up under the intense heat and noise of engines in the computerized cars of the near future. The chemical and oil industries also require reliable instruments that can withstand corrosive liquids and great pressure.

Yet, conventional electronic sensors, made of a combination of materials, are ruined when heat causes the materials to expand at different rates. Wiley has improved a process for making single-material devices by bonding two or more pieces of silicon together. Bonding, however, usually requires glue, and at small dimensions, glue gums up the works.

Wiley's recipe for glueless bonding calls for a piece of silicon covered with a thin layer of aluminum and topped with another piece of silicon. The sandwich is placed in a box that subjects one piece of silicon to a high temperature and the other to a slightly lower temperature. Generating the temperature difference on a minute scale took much preliminary work, according to Wiley.

The aluminum is attracted to the hottest side, and by the end of twenty minutes, has melted its way through one piece of silicon to reach the surface, where it usually evaporates. As the melted silicon layer cools, it bonds to the other piece of silicon and the two become one. A few atoms of aluminum remain in the silicon, but Wiley says their effect is negligible. With this method, Wiley has shaped pieces of silicon containing hollow cavities which can be used to measure pressure.

Different rates of expansion are not the only difficulty that plagues conventional devices—heated semiconductor atoms sometimes break loose to wander into the metallic strips on devices, lowering the conductivity of the metal. Solar cells, made mostly of silicon, are especially vulnerable to heat. The arrangement of atoms within the metals causes them to succumb to the invasion of the semiconductor atoms.

"If you look closely at a brass door-knob, you'll see beautiful patterns etched by the acid from people's hands," explains Wiley. "The patterns indicate the crystalline structure of the brass—straight rows of atoms crisscrossing other straight rows. The regions between the rows are called grain boundaries. Metals used in circuits have the same structure, and at high temperatures, atoms from semiconductors migrate into the grain boundaries."

Research on materials often means finding out what one atom is doing to another atom.

One solution is to block semiconductor atoms by placing barriers between the semiconductors and the metals. Wiley does this by vaporizing certain alloys, such as nickel, and depositing them on the semiconductor so rapidly that the vapor cools before it can crystallize. The resulting barrier consists of a jumble of nickel atoms through which semiconductor atoms have no passage. Research at the University of Wisconsin has produced some of the most successful diffusion barriers, declares Wiley.

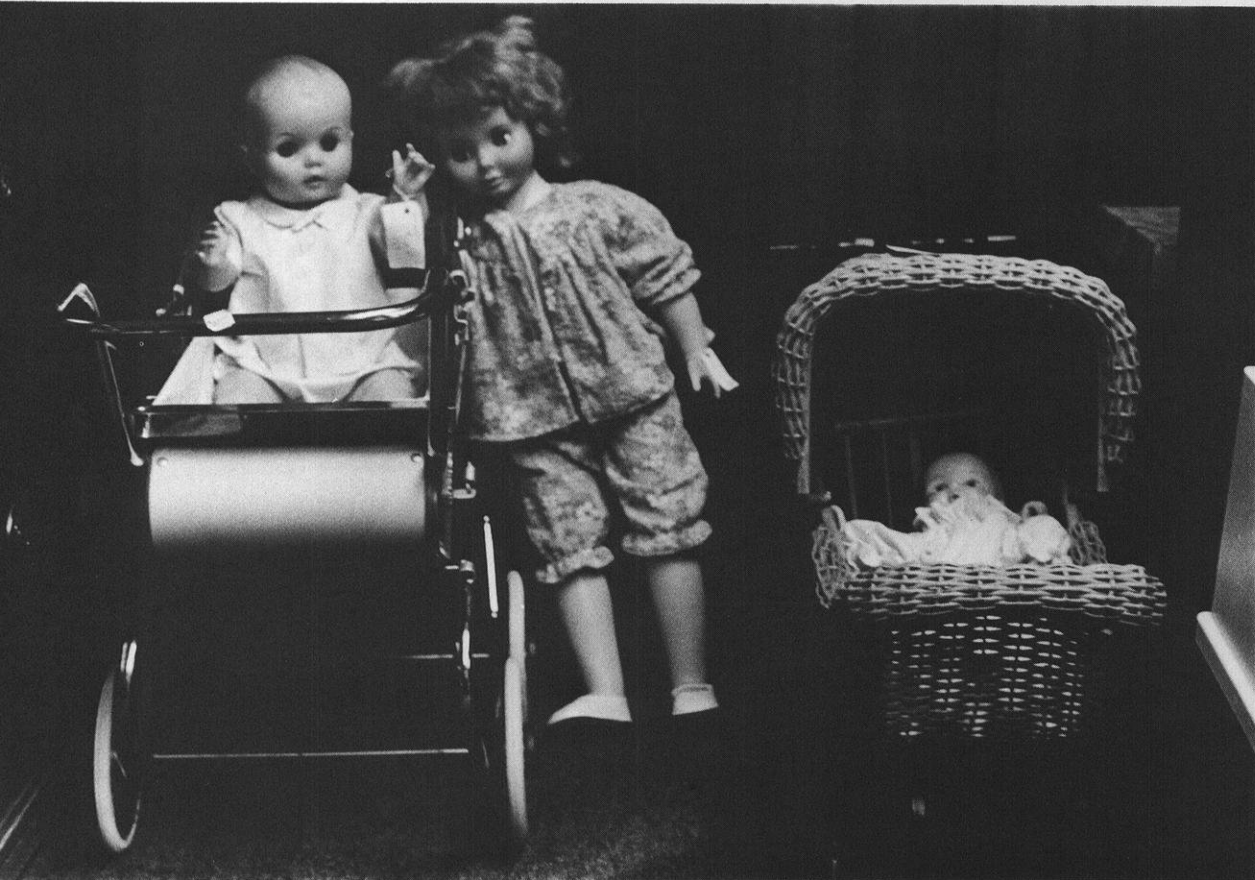
Heat also limits the size, speed, and sensitivity of semiconductor devices, making them unsuitable for some purposes. Extremely fast and sensitive devices must also be extremely small, since even electrons need time to move through a device. A high-speed system must have many such devices packed very closely, but too many devices crammed onto one integrated circuit can dissipate enough heat to damage the circuit.

Superconductors—very cold metals—dissipate little heat. They are also difficult to work with, says James Nordman. Nordman investigates the unusual electrical properties of super-cooled metals such as niobium. With these superconductors he makes Josephson junctions, a type of sandwich between thin metal films. These junctions work on different electronic principles from semiconductor junctions and can be used to form a variety of electronic systems. For example, they have been incorporated into such diverse instruments as one that measures minute magnetic fields such as those associated with brain waves and one that detects faint high-frequency signals from space.

With superconductor integrated circuits, more powerful, dense, and fast computers may be possible. IBM is working on a sophisticated superconductor-based computer that will fit in a liter-sized container. IBM is one of the few places that can afford such research—superconductors require a new technology to manufacture and do not return the immediate profits of semiconductor devices. Nordman is working on ways to transfer semiconductor technology to superconductor research.

Nordman and his colleagues in the Materials Sciences Program are funded by various industries and government agencies, including the National Science Foundation and the Defense Department. Considering the increasing importance of electronics to these organizations, basic research on electronic materials is likely to retain much of its funding in the coming years. □







Photographs by Ellen Morris Jacobson



## POEMS BY FELIX POLLAK

### SOMETIMES I WAKE AT NIGHT

and say your name  
and wonder, dear, whether you ever knew  
what caused that mutual missing of a cue  
that lingered on ("and none of us to blame")  
and wonder, too, if you might ask the same  
moot question, marriages away,  
this very moment? Hardly, it is true.  
Yet, captive of my dream, I'll just the same  
sometimes awake at night and say your name  
and ask moot questions which are as passé  
as sonnets, and invoke telepathy  
to link what has not been to what became.  
Sometimes I wake at night and say your name  
and wish I could believe you did the same.





## SOCRATES

### I.

This above all: he *chose*  
the fall to which he rose.

His was the perfect crime:

Rather than bend his knee  
or take their stealthy key

he took his poison straight  
preferred the open gate

and made his graceful exit into time.

### II.

Never to lose the seeking he had found  
he played the ancient role:  
breaking, he could stay whole.

For them to keep their souls was his last plea  
(he knew that they, not he, were bound)  
and, tearing at their chains, tore himself free.

He died to live, and to remain he went  
and sweeter triumph turned his bitter end.

## MOMENT

When you hold hands with the wind,  
when you pluck the melodious strings  
connecting the stars,  
when you cool your eyes with  
moonlight—all things are created  
equal, even the larvae of ultimate  
blackness, threading an eye-socket  
with the young root of a birch, even  
the fibrous tentacles draining soft lips,  
to flower the shade with their bloom.

## OF THORNS & ROSES

*Incidental Intelligence: All around the town,  
Woolworth's is selling wax roses without thorns  
for ten cents apiece. With thorns, the roses  
go for twenty-nine cents apiece.*—THE NEW YORKER

A thorn is a thorn is a thorn, we profess,  
and for thornlessness we expect to pay less.

Is this because we've always sworn  
that there is no rose without a thorn?

Does it signify as old Goethe says,  
that the hardest to bear are the cloudlessest days?

Are thorns the symbols of pricks and arrows  
pointing to—and fro—the straight & narrow?

Are no-thorns sissy and yes-thorns virile?  
Are we drawn to a vision of claws and of peril?

Do we feel our forefathers would have scorned  
any fairie-rose that had been de-thorned?

Or is it that even a wax-work banality  
must serve our cult of *real* reality?

Is a thornless rose too close to abstract  
while a rose with thorns is a concrete fact?

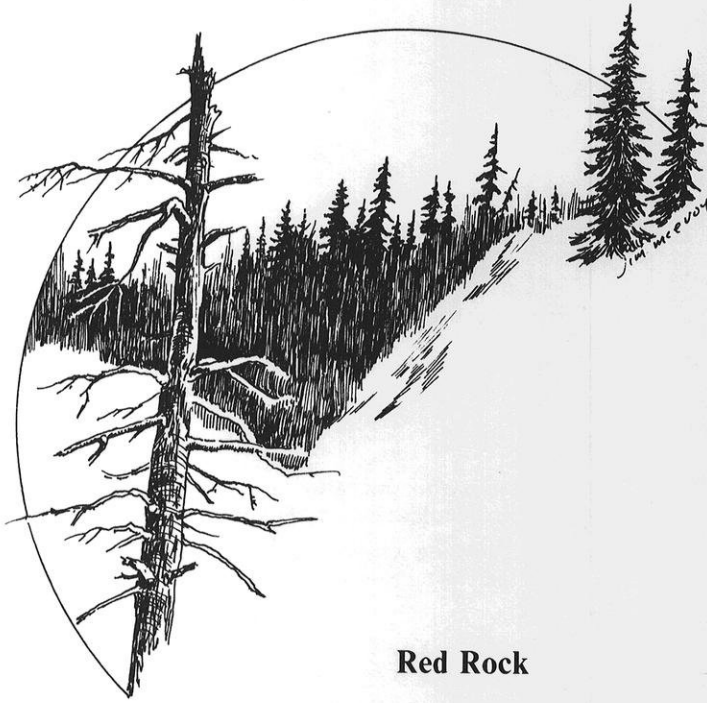
Or is it perhaps in the customers' nature  
that they'll prefer *any* added feature?

Would they pay more for dilemmas with horns  
than for hornless dilemmas? (Or for toes *with* corns?)

I really wish I knew the answer  
—like Woolworth, or God, or a necromancer!



## POEMS BY GEORGE GOTT



### Red Rock

We called it Red Rock  
because that's the first thing  
we saw in the morning,  
the sun breaking over the mountain.

You were old  
and I was young.

You held me up  
in the sunlight  
and let me run  
joyously and endlessly:

So it seemed.

We sang a song  
of a rabbit  
and a bear.

Now, Old Bear,  
it has been a long time  
since I have touched that rock.

My body listens  
for the sweet voice  
that is silent within it.

I cannot take you  
where I am going.

The rabbit lies dead  
in the moonlight.

### The Outlaws

At Point Solitude  
we stood  
at the edge of darkness,  
the silence  
whispering  
within us.

We touched  
breathing words  
we could not say.

But who can know  
the difference  
between magic  
and miracle.

At Point Solitude  
we dreamed  
only when necessary,  
taking the freedom  
to choose  
the ultimate action.

Is it any wonder  
we are remembered  
so well in our country?

Much of the present urban pattern of northern Wisconsin originated during the period of intensive forest exploitation. Lumbering became the chief incentive for the penetration of the forest, and as the lumbermen ascended the streams in quest of white pine, settlements followed.

## The Geographical Impact of Log Transportation

### The River Driving Era in Wisconsin

By Rand E. Rohe

In the United States, the generalized historical pattern of lumbering resembled a continuously expanding wave that spread westward across the nation. The main wave began in New England in the seventeenth century, reached a peak of production in the Lake States after the Civil War, and achieved its final crest in the Pacific Northwest at the turn of the century. In the process of exploitation, the lumbermen planted cultural elements and patterns; often, in fact, their cultural complex represented the first major human impact on an area. As a result, lumbering played an important role in the formation of the present cultural landscape in large portions of the northern United States.

As yet, however, no systematic attempt to measure this role exists; the geographical impact of lumbering remains practically unexamined. The lack of any study that adequately analyzes the nature, origin, and permanence of landscape elements peculiar to lumbering is not surprising, for the magnitude of its impact makes a thorough analysis difficult. An analysis of the impact of a dominant factor in the lumber industry, however, offers some insight into its role in the formation of the present landscape.

Of the factors involved in the production of lumber, transportation is probably the most important. The transportation factor often dictated sawmill location, the size of operations, timber valuations, and, indeed, it decreed what areas could be profitably logged. It often even determined when logging could take place. Therefore, an examination of the geographical impact of log transportation in Wisconsin, once a leading lumber state, could serve as a measure of the total impact of the industry.

Throughout the nineteenth century, almost the entire lumber cut of Wisconsin consisted of white pine, and the rivers and streams served as the major means of log transportation. Logging generally took place in winter when snow and ice facilitated the transportation of logs from the stump to the riverbank. At the riverbank, the loggers piled the logs into great horizontal tiers to await the June freshet when they would drive the logs downstream to the mills.

#### Logging roads

At first, when logging took place within four or five hundred feet of the driving streams, the lumbermen simply skidded or dragged the logs directly to the riverbank. For large logs and greater distances, the lumbermen employed the



Photo courtesy Wisconsin Department of Natural Resources



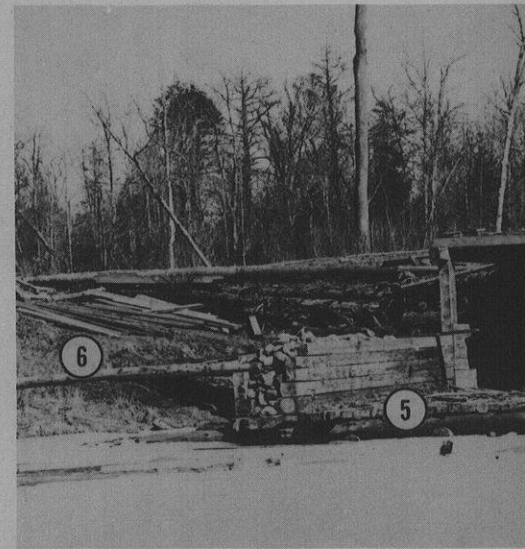
crude travois. The travois (travoy or go-devil) usually was nothing more than a y-shaped tree trunk with a crossbar across its end. The routes followed by the travois were usually just primitive trails that spread fanlike from the riverbank.

For a while, the travois served for transporting the logs from the stump to the river. As logging operations pushed farther back from the streams, however, the travois proved inefficient and the logging sled came into use, making road construction necessary. At first, these roads were merely a trail about ten or twelve feet wide cleared of trees and underbrush. With the increasing size of lumber operations after the Civil War, however, the number and character of the logging roads changed. In the 1870s and 80s the logging roads commonly formed a complex network covering the tract to be logged. The main logging road was usually about sixteen to twenty feet wide and cleared of all roots and other obstructions. Its length varied with the size of the operations. Sometimes the main road was ten or twelve miles long, but generally it did not exceed five miles in length. The main road led to the rollways at the river where the logs were stacked horizontally until spring (Fig. 1).

Leading off from the main road at various angles, the lumbermen cut smaller branch roads about eight feet wide on the straight-a-ways and wider on the curves. Generally only the underbrush and larger obstructions were removed. At certain places along the roads, small clearings, skidways, were made to facilitate the loading of logs onto the sleds. From the felling point, the lumbermen would clear a trail to one of the tributary roads and drag the log to the skidway. Generally, the branch roads approximately paralleled each other to divide the logging tract evenly and avoid snaking the logs any great distance. Both the main road and its branches contained turnabouts to permit the passing of two sleds.

As lumber operations exhausted the better pine near the streams, longer hauls became necessary, and the size of the logging sleds increased. Some of the logging sleds of the nineties weighed as much as five thousand pounds and had runners as long as nine feet. These sleds could not run on hastily constructed logging roads; intensive road grading became necessary. After being graded, some of these main roads resembled railroad rights-of-way.

The building of the various logging roads required a considerable amount of



work. Road construction included clearing the roadbed of trees, underbrush, roots, boulders, and other obstructions. The numerous swamps and low areas necessitated the construction of corduroy passes, streams required the building of bridges, and hills often meant extensive excavations.

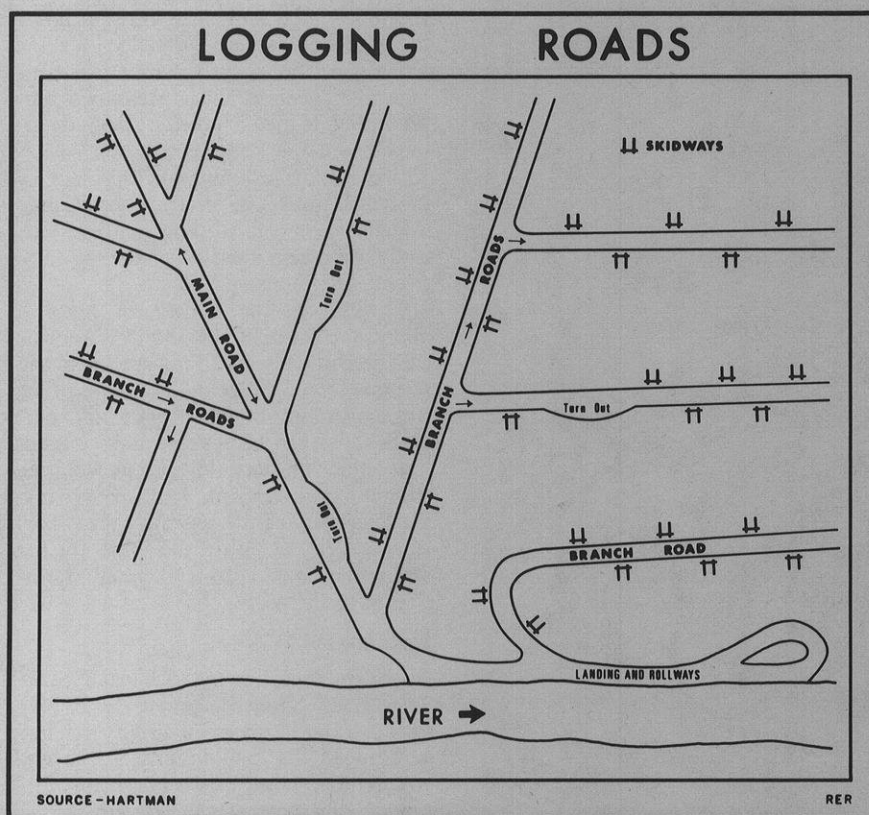
Today, little remains of the skidways, rollways, and travois trails, and from the ground vegetation obscures many of the logging roads. From the air, however, the main logging roads and their branches often form an intricate pattern winding through the forest. In northern Wisconsin, many of the various logging roads are still visible. Some have evolved into county or town roads, a few into highways. Most, however, are now trails or fire lanes serving the tourist, vacationer, or sportsman.

#### River and lake improvements

In their natural state, many rivers and streams offered serious obstructions to log driving with boulders, rock-stewn rapids, narrow gorges, waterfalls, sandbars, or accumulations of driftwood and fallen trees. As the lumber industry expanded northward, many alterations of the natural waterways took place to assure successful driving.

Even before 1860, lumbermen on a few logging streams instituted small-scale booming and improvement companies. By 1870 every logging district in the state had a boomage and improvement company. Until the end of large-scale lumbering, every session of the Wisconsin legislature received requests for charters to build dams, construct booms, and improve streams. Between 1850 and 1900, the state legislature granted a total of 331 franchises for logging dams.

Fig. 1



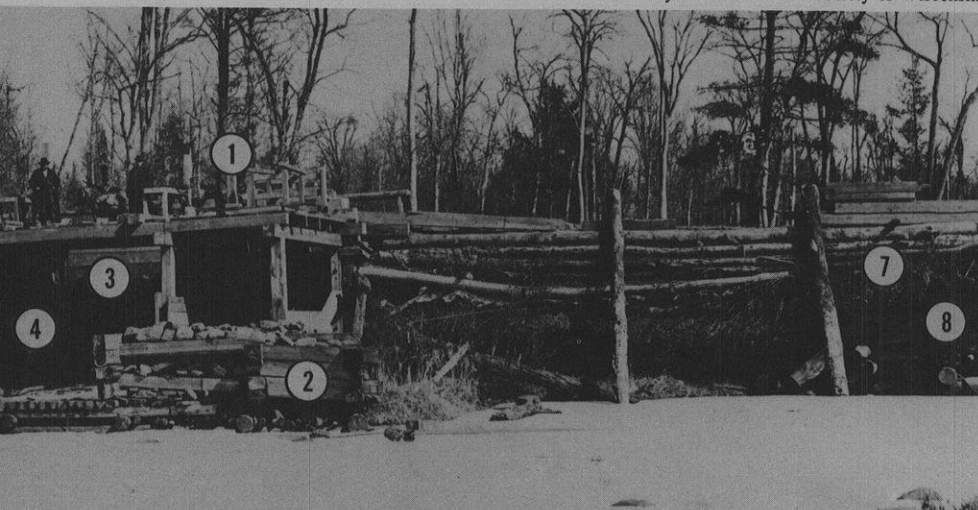


Fig. 2: Logging dam in northern Wisconsin. Key: (1) Vertical plank gates (2) Piers (squared-timber cribs filled with stone) (3) Sluice (4) Sluiceway (5) Log Apron (6) Dam wing (7) Toe piling (piling driven at angle into the bed of the river and filled with a gravel, stone, and earth backing) (8) Log partition

As logging dams became more numerous, they also became larger, more lasting, and more expensive. One of the largest logging dams in the Lake States was the Nevers Dam on the St. Croix River built in 1890 at a cost of \$250,000. According to the *Mississippi Valley Lumbermen*, April 25, 1890, the St. Croix Dam and Boom Company and St. Croix River Improvement Company drove over 7,500 piles from twelve to fifteen feet into the bed of the river to form a base for the dam. When completed the dam contained fifteen gates, and its flowage extended some ten miles upstream.

By artificially controlling their regimes, the logging dams noticeably modified the streams. The sudden release of water by the dams to carry logs downstream eroded the banks. This in turn widened the river bed, undermined trees that fell into the river, and created new sandbars and mud banks. The driving dams probably especially widened the tributary streams as a result of the frequent artificial freshets and the impact of the logs against the stream banks. More dams created more artificial floods which in turn necessitated more work to keep the channel in shape for log driving. The effects of the driving dams on a river—to widen its bed, lessen its depth, and increase the size and number of sand and gravel bars—was particularly noticeable along the St. Croix.

## Logging dams

Most logging dams collected and held water for the driving of logs downstream during the June freshet. The most common logging dams consisted of a cribwork of logs or timbers filled with stone and gravel and an attendant log or plank sluiceway. Generally the sluiceways consisted of heavy timbers laid at an angle of twenty or thirty degrees and held in place by stone-filled cribs. The gates of these dams usually consisted of upright planks or logs that worked up and down in a slot at the upper end of the sluice (Fig. 2).

Early logging operations that utilized the best driving streams necessitated only a few, often temporary and relatively inexpensive, dams. As the timber line receded northward, however, the lumbermen utilized smaller and smaller streams and built innumerable dams. On the upper Wolf, for example, lumbermen constructed over forty dams after the Civil War (Fig. 3). Similar operations took place throughout the state on all the logging streams.

Fig. 3: Close-up of the Dells Dam, Wolf River, built in 1873, 16 feet high and 40 feet long

Courtesy Oshkosh Public Museum





After the last log drives, some logging dams continued to be used for water storage, power, or became the sites for more modern structures, but most simply were abandoned. Yet the impact of these dams can still be seen. Many of the reservoirs formed by these logging dams still dot the landscape of northern Wisconsin. Along streams of northern Wisconsin some evidence of the old logging dams survives. On the Wolf, for example, remnants of dams and small impounding structures remain at fifteen different sites on the mainstream. On the small headwater streams often much of the original structure may still be seen (Fig. 4).

### Riparian and bed improvements

Besides the construction of dams, other "improvements" of the natural waterways were necessary to get the logs to the mills in the shortest time at the least expense. As logging operations moved upstream, the streams often became shallow, narrow, and choked with brush and rocks. Such conditions along the headwaters of the Wolf caused lumbermen in 1878 to deepen the channel, blast out rocks, close up side cuts, and build dams, wing dams, and side booms to enable log driving.

On some streams, the lumbermen found it necessary to render rapids, waterfalls, and gorges less dangerous to log driving. On the Wolf at Sullivan Falls, the lumbermen constructed a trip, a boom between two piers. At Grand Rapids on the

Wisconsin, wing dams were built to concentrate water in the center of the stream. While at the falls of the Oconto, lumbermen blasted out a channel or chute for the logs to pass through.

Narrow gorges confronted the lumbermen with a somewhat different problem. Logs going down these gorges sideways could get lodged causing a log jam to form. The Wolf River Improvement Company removed such a problem on that stream by blasting the Dalles four feet wider (Fig. 5).

Besides falls and narrow gorges, many of the logging streams contained large boulders that offered serious hindrances to log driving. Parts of the upper Wolf, for instance, contained many boulders four to eight feet in diameter. In just 1871 the Keshena Improvement Company blasted and removed large boulders for a distance of some twenty miles above Smokey Falls to obtain a suitable channel for log driving. In all the Improvement Company blasted and removed large boulders from about thirty miles of the riverbed.

### Inland lake improvements

Besides altering the streams of Wisconsin, the lumbermen made significant changes in the inland lakes of the state to facilitate log driving. Most often their "improvements" consisted of canals to enable the driving of logs between a lake and a logging stream. The *Shawano County Journal*, July 27, 1872, described

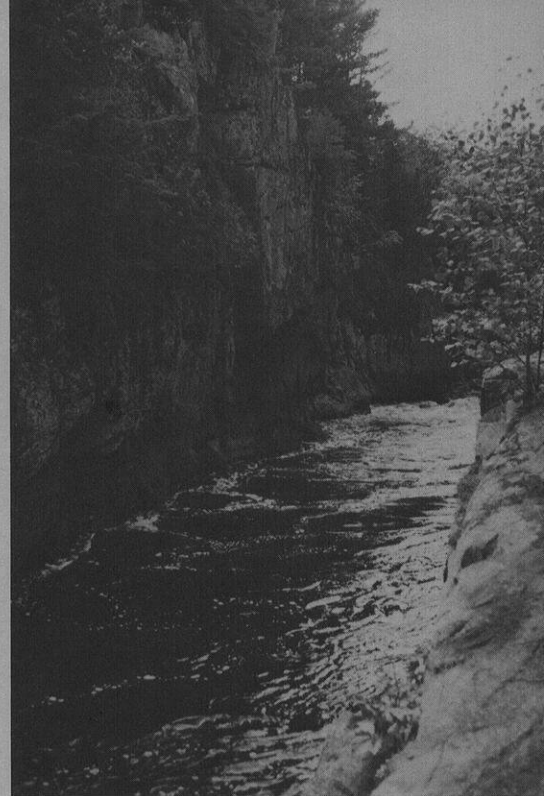


Fig. 5: Wolf River Dells, originally about 16 feet wide, but blasted 4 feet wider to facilitate log driving (note angularity where blasting took place)

one such "improvement." Low water caused lumbermen to construct a "Dutch Gap" canal of about eighty rods between Shawano Lake and the Wolf River. Probably one of the most important of these canals was the "boom cut" between the Wolf River and Boom Bay in Lake Poygan. The bay offered excellent facilities for the holding, sorting, and rafting of logs, but originally a narrow stretch of lowland separated it from the river. In 1858 the Wolf River Boom Company rectified this situation by digging a canal a mile and a half long, eighty feet wide, and six feet deep between the Wolf and the bay (Fig. 6).

Today some evidence of most of these canals remain. The term "boom cut," for instance, still appears on many of the maps of the Wolf River-Lake Poygan area; and the cut itself still serves as a shortcut between the Wolf River and Boom Bay. Throughout northern Wisconsin, many other examples of these lumber canals can be found.

### Booms

Where logging took place on a large scale and several companies drove logs on the same stream, the logs became mixed, requiring their holding and sorting at some point above the mills. The efficient handling of the thousands of logs that came down the rivers and streams of

Fig. 4: Remains of Burnt Dam, McCaslin Creek, Sec. 33, T. 33N., R. 15E





Fig. 6: Boom Cut, canal cut to connect a bay (Boom Bay) in Lake Poygan directly to the Wolf River

Wisconsin required the construction of intermediate and terminal facilities. Some consisted of a single holding boom with storing gaps at intervals, others formed an intricate maze of holding booms, sorting gaps, and rafting gaps (Fig. 7).

Two major types were jam booms and sheer booms. The jam boom, timbers stretched rigidly across the channel and buttressed with pile or stone-filled cribs, stopped logs and held them until they could be handled by the mills. In connection with the jam boom, the improvement and boom companies constructed sorting works, a narrow passage flanked by gaps that led to the booms of individual owners or to a rafting grounds. The sheer boom swung on a pivot-joint attached to a crib or pier built of squared-timber filled with rock or of driven piles covered with timber.

Between 1851 and 1873, the Wisconsin legislature authorized some seventy-five charters for boom companies. The first charter granted was to the St. Croix Boom Company. While the St. Croix was the first boom constructed in the state, the largest booming works in Wisconsin were in Beef Slough, one of a number of shallow channels through which the Chippewa River reaches the Mississippi. Originally, Beef Slough was almost completely obstructed even for the running of logs. In 1870 the Beef Slough Boom and Improvement Company placed a sheer boom in the Chippewa at the entrance of Beef Slough, constructed a jam boom at the lower end of the slough, and began to clean out the slough. A year later the Mississippi River Logging Company gained control of the Beef Slough Boom and Improvement Company and made more extensive improvements at

Beef Slough. The company drove thousands of piles, placed booms, and arranged pockets and gaps to sort, store, and raft logs. Besides the facilities at Beef Slough, the Mississippi Logging Company obtained a franchise to build sheer booms in the Mississippi and other works in Rollingstone (Straight) Slough to catch logs that escaped from Beef Slough. Today little remains of the booms at either Beef or Rollingstone Slough to indicate their former presence and importance.

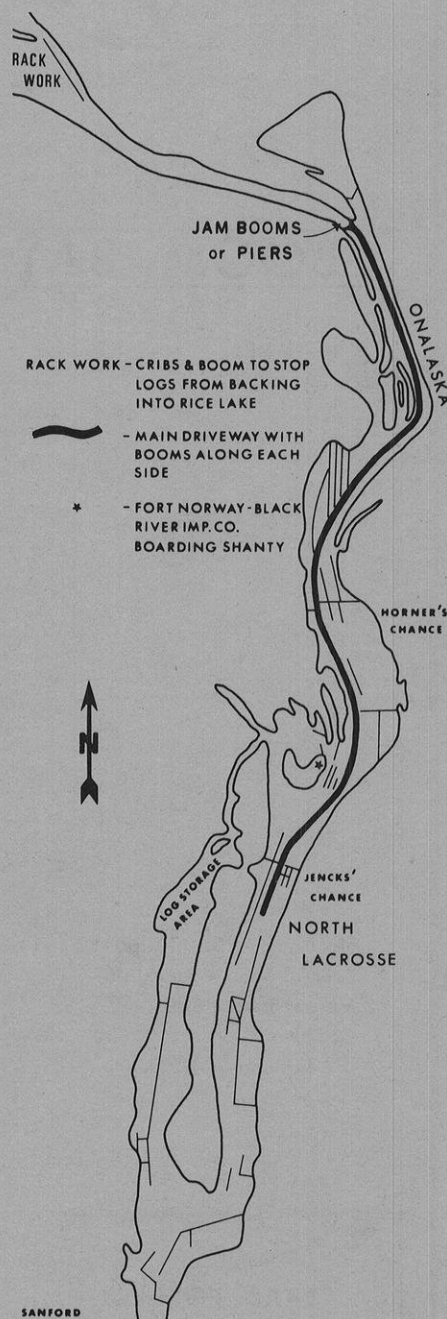
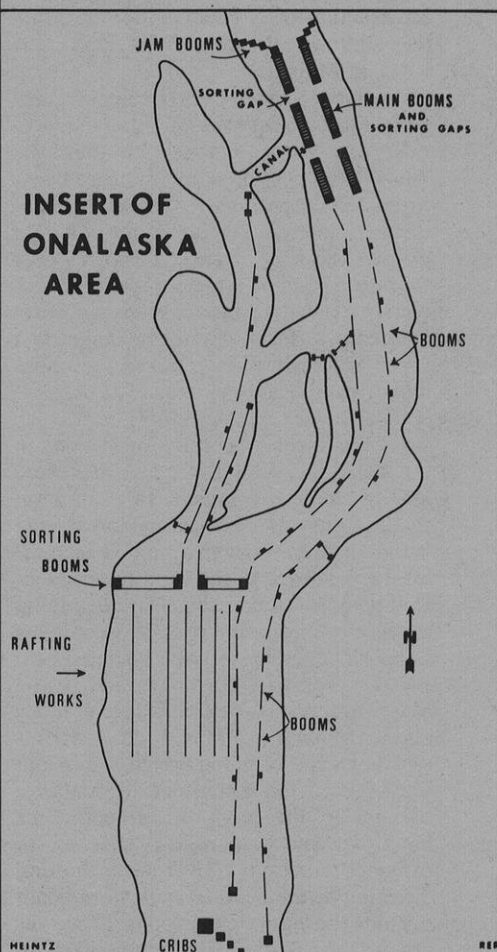
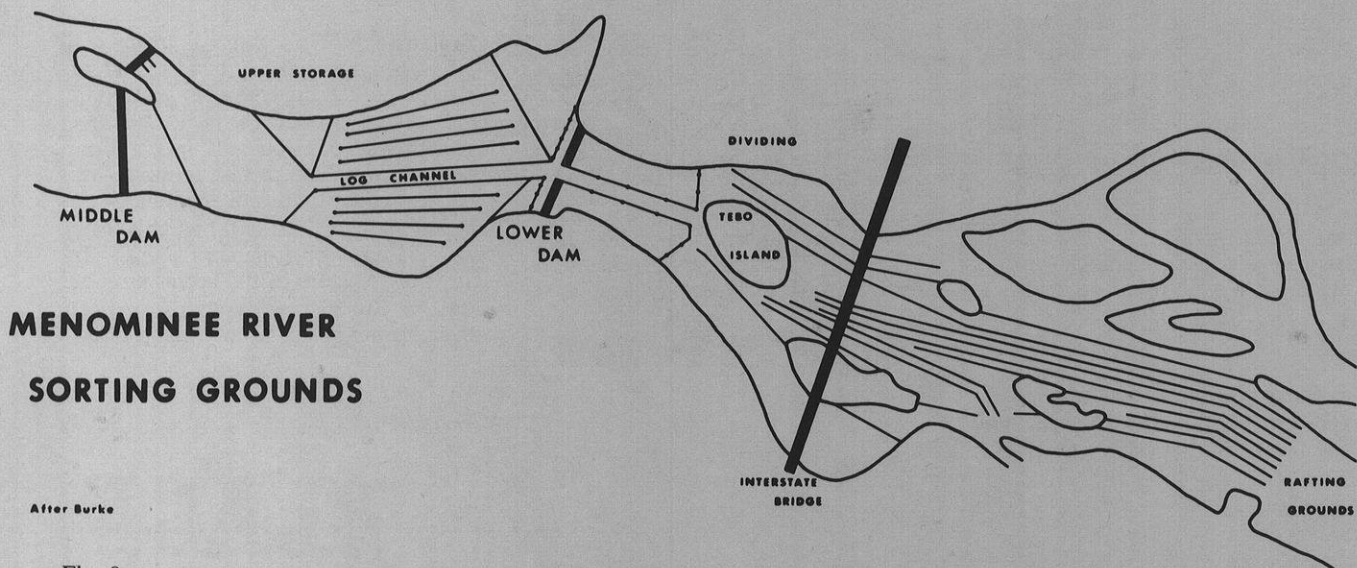


Fig. 7

# BLACK RIVER BOOMS







## MENOMINEE RIVER SORTING GROUNDS

After Burke

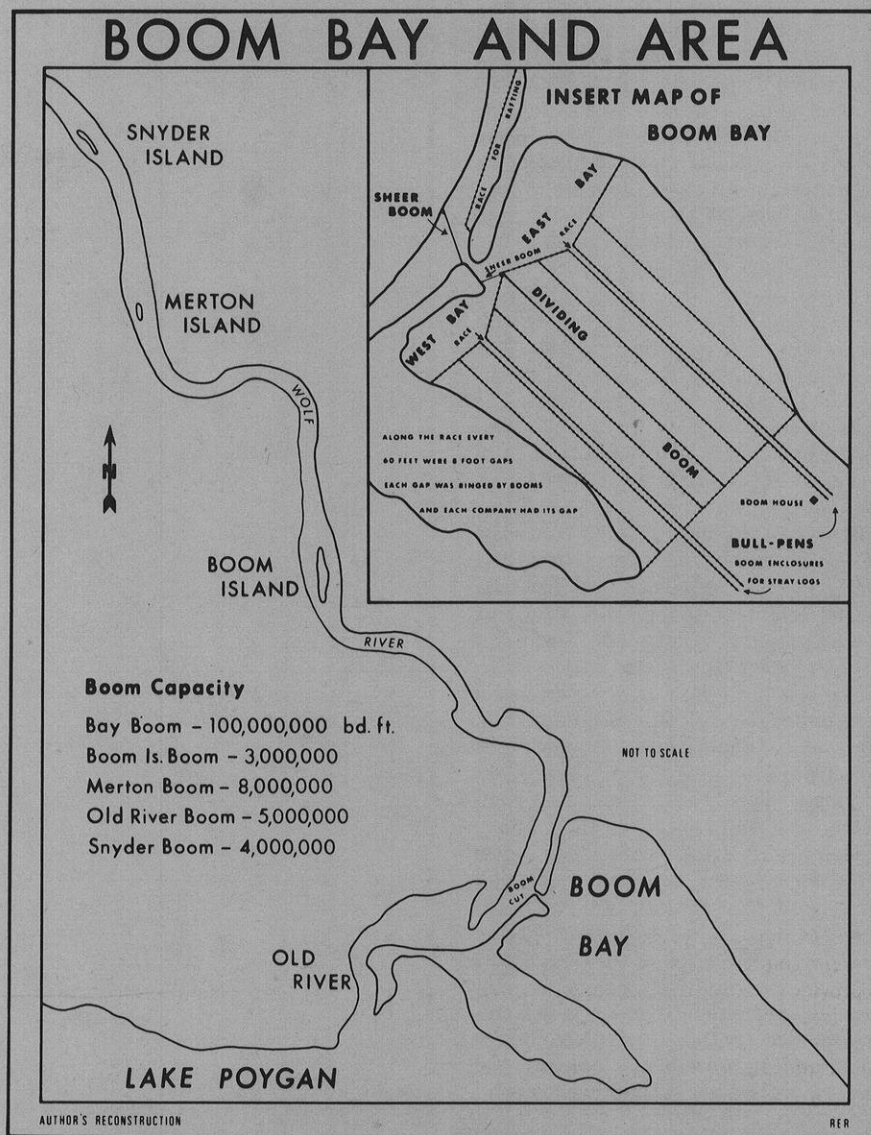
Fig. 8

In contrast to the operations on the Chippewa, the lumbermen on the Menominee River initially constructed piers to hold logs. Their inadequacy soon became obvious, however, and in 1867 the Menominee River Boom Company began construction of a boom patterned after the Oldtown Boom on the Penobscot River in Maine.

Just above Marinette, the Boom Company built a sequence of three dams to raise the water and confine the logs. Above the upper dam, an immense boom formed the depository for the whole Menominee pineries. Piers and lines of piles divided the logs at short distances over the entire pond. A large number of "jam" piers extended at intervals for six miles upstream to form a timber channel and check the rush of logs. Below the upper dam a complicated system of booms extended to each of the mills (Fig. 8).

Of the various booming operations in the state, the Wolf River facilities were among the most complete. In addition to the large booms, and sorting and rafting works in Lake Poygan common to most lumbering districts, the Wolf River Boom Company maintained extensive detaining or store booms on the river between New London and Oshkosh. These booms (Boom Island, Merton's, Snyder's, and Little Boom Island) started about two miles above the mouth of the Wolf and consisted of a row of piling driven firmly into the riverbed for a considerable distance parallel to the bank, with boomsticks hung between the pilings. A sheer boom extended across the river in a slanting direction at the head of each store boom to guide the logs into the boom. The lower end of each of the store booms likewise

Fig. 9



contained a swinging boom to allow the logs to move downstream when necessary. When rafting began at Boom Bay, the boom company opened the storage booms one at a time and drove the logs down to the Bay, which contained two immense booms (Fig. 9).

Besides the large booms of the various improvement and boom companies, the mills along the rivers usually maintained smaller booms for storage and holding. Sometimes the mills used a slough adjacent to the river or the river itself for log storage and excavated a canal to serve as the channel of the river. In 1875, for example, lumbermen cut a "race" from the Chippewa River to Half Moon Lake, a cutoff meander of the Chippewa. A sheer boom placed across the Chippewa diverted the logs into the lake, where they were stored until needed by the mills (Fig. 10).

### Harbors

Prior to the 1870s, almost all of the lumber produced on or near Lake Michigan reached market via sailing vessels. As early as the 1830s, schooners began regular trips between the lumber ports and the lower lakes. The lack of suitable harbors for these vessels, however, necessitated towing the lumber out to them in small rafts or on barges.

In the early years lumber shipped from Oconto by water was loaded on scows or floated in rafts over the sandbar at the mouth of the river to vessels anchored in Green Bay. With the construction of two piers at the mouth of the river and the dredging of a channel up to Oconto, however, the lumber vessels could be loaded directly and the cost of towing and extra handling avoided.

At Marinette-Menominee on the Menominee River, the lumbermen faced a similar problem. First, a sandbar at the mouth of the Menominee forced the lumbermen to load their lumber on lighters or float it in rafts to vessels anchored in deep water. Second, the natural channel was narrow and not more than four feet deep in some places. In 1871 construction started on a pile pier, and dredging began to deepen the channel of the river and remove the bar across its mouth. The Menominee Dredge Association completed a channel 120 feet wide and 14 feet deep in 1874, solving the problem.

At Peshtigo, the lumbermen devised a different solution to the same problem. To provide a harbor the lumbermen drove piles into the bay a distance from the shore and filled the intervening space with slabs, edgings, and sawdust from the mills. In effect, this extended the shore-

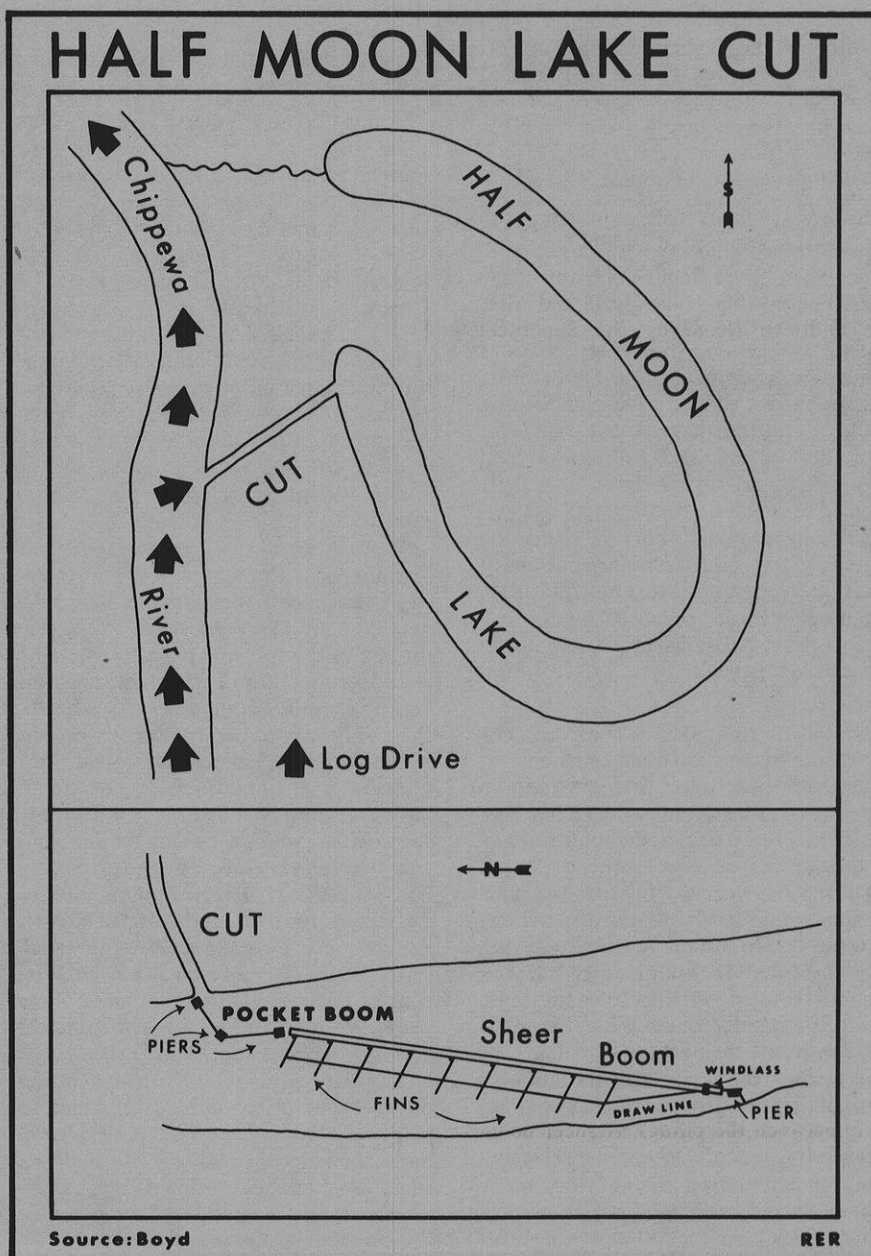
line into deep water where lumber could be loaded directly onto sailing vessels.

Even on minor logging streams, like the Pensaukee River, lumbermen constructed rather substantial harbors to facilitate lumber transportation.

In addition to harbors at the mouths of the large streams tributary to Lake Michigan, many mills scattered up and down the lake shore constructed docks

and harbors. These often took the form of a simple breakwater enclosing two or three acres of water. While the harbors constructed during the lumber era survive to the present, hardly a trace remains to indicate the activity that gave them their origin. At Peshtigo, for example, the docks have almost disappeared. Only a few piles that have escaped removal and decay remain.

Fig. 10





In "improving" the waterways the lumbermen made relatively permanent changes by cutting short canals across bends or between lakes and streams, by straightening channels, by clearing away rocks and driftwood, and by blasting gorges wider.

Although the lumbermen generally left few written records of how they altered the natural waterways, occasional references like the following from the *Shawano County Journal*, December 7, 1865, provide us with valuable insight:

Messrs. Jenkins, Crane & Co., who have been engaged in making improvements on the West Branch of the Wolf River, above Keshena, have nearly completed their labors, and the character of the improvements and their necessity is apparent to every one who visits them. All who have ever been on the West Branch know the character of the stream, filled with rocks, bold rapids, overhanging trees and driftwood to such an extent that all the valuable pine lands, above Keshena . . . were nearly valueless. They have built seventeen dams, blasted out the rocks, built sluices, cut the overhanging timber, cleared out driftwood and made the River passable for a drive of logs.

...

Besides the limited written records, visual comparisons between portions of streams utilized for log driving with those not used offer concrete evidence not only of the nature, extent, and significance of its impact, but of its permanence.

During the river driving era, the lumbermen considerably altered the natural waterways. In order to facilitate log transportation, the lumbermen cleared the streams of various obstructions, changed and deepened their channels, and controlled their regimes by dams. In "improving" the waterways the lumbermen made relatively permanent changes by cutting short canals across bends or between lakes and streams, by straightening channels, by clearing away rocks and driftwood, and by blasting gorges wider.

## Settlements

As the lumber line moved northward, sawmills sprang up along almost every river that could float a saw log. These mills became the focus of early economic activity and acted as the nucleus for a large number of settlements. Pronouncements like the following from the *Green Bay Advocate*, March 9, 1871, were common occurrences in newspapers during the lumber era:

Every stream running into Green Bay that is large enough to float a saw-log is as sure to breed saw-mills along its banks as a swamp is to breed mosquitos, and that is the way that A.C. Conn & Co. happened to locate their mill near the mouth of the Little Suamico, and the most of the town here has grown up around the mill as naturally as weeds spring up in the best ground in our gardens.

Almost every city north of a line from Fond du Lac to La Crosse began as a lumber town. Over forty of these towns became major lumber centers, among them Marinette, Oconto, Green Bay, Wausau, Stevens Point, Grand Rapids, Merrill, Eau Claire, Chippewa Falls, La Crosse, and Oshkosh.

In fact, much of the present urban pattern of northern Wisconsin originated during the period of intensive forest exploitation. Lumbering became the chief incentive for the penetration of the forest, and as the lumbermen ascended the streams in quest of white pine, settlements followed.

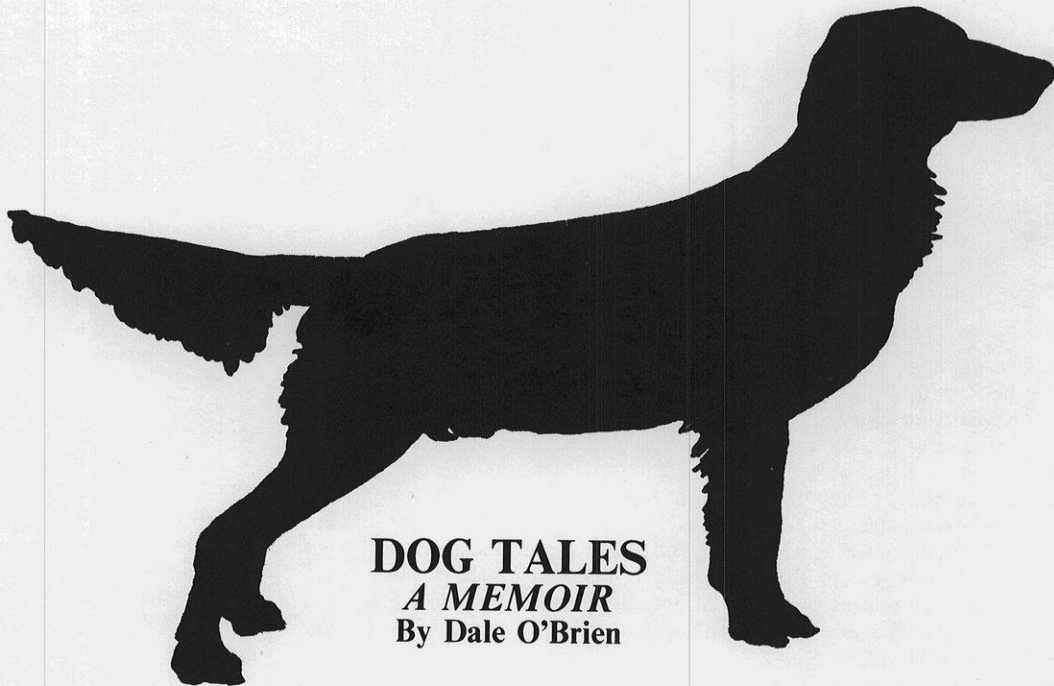
When the lumbermen located their sawmills near the timber, away from existing settlements, they often set up wholly new communities. Almost every task performed in these towns played some part in supplying the mill with logs and converting those logs to lumber. As a result, these settlements became concentrations for landscape elements associated with lumbering. Distinguished by the dominating sawmill or mills, the row-housing, the company-owned dwellings, the company store, the lodging and boarding houses, these settlements represented a distinctive type of lumber settlement—the company town. Upwards of fifty such settlements once covered northern Wisconsin. Their single function made these towns self-contained and self-sufficient but in time contributed to their decline and or their extinction. With the cutting of the forest often nothing remained to justify the continued existence of a town. Some, however, gained new life as diversified wood manufacturing points, as recreational centers, or as service centers for the surrounding farming community.

The transportation of logs by water lasted as long as the white pine. With the exhaustion of pine along the streams and the increasing utilization of hardwoods came a decline in the use of the traditional methods of transportation. In the late 1870s, the hardwoods began to assume a sizeable part of the timber cut. Hardwoods waterlogged and sank in water; they had to be moved by rail, not down the driving streams. By the late 1890s, log driving on most streams was nearing its end. After the turn of the century, relatively few log drives came down Wisconsin streams. The middle twenties saw the final episode of log driving in the state.

Today the great pine forests and the men who cut them are scarcely more than memory. The passage of time coupled with the action of man and nature has obliterated or considerably altered many of the landscape elements left by the lumber industry. The impact of lumbering is slowly disappearing from the landscape; only a few ghosts remain. In its half century of dominance, however, the industry left its mark on the geography of Wisconsin. Any adequate understanding of its present landscape, therefore, demands an examination of the lumber era, and in particular log transportation.

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**DOG TALES**  
*A MEMOIR*  
By Dale O'Brien

If Pa's office was his sanctum, it was Ma's despair. It contained three smallish rooms in a limestone building that once was a grain elevator down by the railroad tracks in Russell. When he leased it, Ma made pleated gingham curtains for the windows, hung his diplomas on the walls of the main room, put up Cézanne and Van Gogh prints acquired on her last trip to Chicago and the Art Institute, and sent over from home some occasional furniture, for the most part altogether too frail and domestic for the setting and the massive frames the farmers settled on them. Pa accepted her determined ministrations stoically. But he never welcomed her to this man's domain. She'd come once in a while, all right, but only as an invader armed with broom and bucket to clean and straighten and air the place. In any lasting sense her ministrations were fruitless; the stamp of Pa's predilection was inevitably triumphant and singular beyond duplication.

The curtains soon became his book-keeping ledger. A farmer would come to borrow an instrument (Pa never charged for the loan of equipment) or to buy vaccine or Epsom salts or some other compound. Pa would record the transaction

on a scrap of paper and pin the paper to a curtain. When the farmer returned the instrument or paid his bill for the materials charged, either Pa or the farmer would remove the memo or pin the check to the curtain. All the curtains were permanently festooned with memos and checks, some small portion of which was changed almost daily.

Pa's swivel chair, picked up at an auction, had soon collapsed under his bulk and had been replaced with an overstuffed parlor chair of dubious parentage and upholstered in a flowered magenta velour. It seemed to give him immense satisfaction partly because he knew it was an affront to good taste and even though one of its legs had broken off under his shifting weight. He had replaced the leg with two volumes of veterinary textbooks. His desk, I suppose, had been a Montgomery Ward sale item and looked it. It was altogether too small; its surface was gouged from rough use and farmers' boot heels.

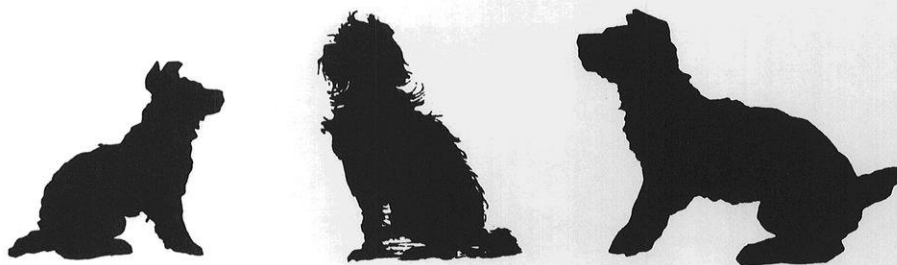
One of the smaller rooms was a dissecting and diagnostic laboratory. The third room contained his supplies to

which, most often, the farmers would help themselves. The entire suite was overwhelmed with the odors of carbolic acid, iodine, dissected animals, pungent drugs and vaccines, and the smoke of numberless cigarettes and cigars whose ashes were seldom emptied from the jar lids into which they had been flicked.

Pa had great respect for some of the farmers in the huge area he served. They were the salt of the earth, he said, and, by God, they were square shooters who'd pay their bills eventually even if there was a howling depression. I think he must have known every farmer within a radius of thirty miles of our town. He knew them because they called him to come when they had work for him. And he knew them because he held court, as Ma used to say, in his office on Saturdays.

In this court Pa was at ease. He enjoyed the adulation of his clientele, a gladly given deference that could not have been comfortably forthcoming had they visited him in the relatively uppish precincts of his home as, upon rare occasion, they had to do. He held court there as revered counsel both as veterinarian and as mayor, or as the "Farmer and Stockman" columnist for the paper. It was here in his





court that he was urged to run for the U.S. Senate on the Republican ticket, an almost certain passport to Washington from Kansas in those days (he declined, I regret to say). It was here that he could put on a face that he liked, although it was not his only or even a truly representative face. But it elicited a worshipful response he got nowhere else, and that nourished him. It was here that he could talk in the idiom of the farmers, with which he was comfortable, even though at home or in the company of professional or academic people he could adjust his speech with masterful confidence. He required the untaxing camaraderie of these cattlemen, perhaps because it linked him to his own roots on the farm and because he never established any satisfying relationships in the unpredictable and defeating life of the cities where he'd lived.

And so it was one hot and dusty summer Saturday, with ten or a dozen of Pa's courtiers in attendance, with Ma's festooned curtains flapping in the wind at the windows, when all was well in heaven and on earth, when that damned Ronald came along to destroy the afternoon's congeniality.

Prelick Bindl, who had been gravely attentive to Pa while looking out a window fronting on the gravel access road to the old elevator, all of a sudden took the pipe from his mouth and remarked, "You ought to see some damn fool beatin' his tail down this way like a bull with a cob up his ass."

Pa and the other farmers got up to look. Here came a fancy, four-door touring car with top down, roaring up a tornadic volume of dust behind it and heading straight for Pa's office. The could see behind the wheel the figure of a fashionable matron, her hands clenched to the wheel, her face set in hard lines.

Pa said, "Let's set down again boys. I'll shut the door and maybe she'll go away. What the hell would this woman want with me, anyway?"

Conspiratorially, they all sat down again and someone tried to say something casual when there came an imperious banging at the door and the sounds of a choked and distraught voice pleading with Ronald to be a good dog for it wouldn't be long till doctor fixed him up.

The banging continued insistently and with a rising frenzy. The farmers' eyes shifted from the door to Pa's face as if to inquire, "Well, Doc, what're you gonna do?"

Outraged at having his court disturbed by, of all things, a "clubwoman" with a dog, furious at the brazen banging, Pa at last got to his feet and opened the door. In swooped Madame with a sleek and disdainful Doberman at the end of a leash. Ronald appeared to quite composed and in no obvious discomfort, but Madame was already bleating at Pa without so much as a howdy-do to the court or an apology for the interruption of what to a man's eye would have been serious business.

"Oh, doctor, it's Ronald," she cried, as the farmers sat like rough-hewn mannequins, some with thumbs hooked through the suspenders of their overall bibs, some with pipes or cigars clamped stiffly in their mouths. The only movement in this rustic tableau was in their darting eyes which were flitting with fascination from Pa to Madame to Ronald.

"It's Ronald, I said," Madame bawled at Pa, he having made no comment.

Through his teeth Pa said at last, "What's the matter with Ronald, ma'am?"

"I don't know, but I think he's in terrible pain and, oh my God, I don't want my Ronald to suffer and you're the best animal doctor in western Kansas, and I threw him in the car and raced all the thirty miles from Natoma so he could have the best possible care right now. Oh,

doctor, you must save him. Save my precious puppy, doctor, right away!"

"Now look here, ma'am," said Pa, bending down, patting Ronald reassuringly on the top of his head, pulling down the dog's eyelids and opening his mouth for a quick check, "this dog don't seem to be in pain and I just don't believe there's anything hurting him. But if you'd care to leave him here overnight I'll check him thoroughly in the morning. Come in about ten."

He said these words quietly, emphatically, leaving no doubt in the court's mind that he proposed not to be put off too long from the important business.

"Don't tell me Ronald's in no pain, doctor!" Madame shouted. "I've had Ronald since he was a baby and I know when he's in pain and if you don't do something right now, I'll . . ."

"Madame," Pa addressed her with an icy smile, "as you can see, I am busy now. I said I believe your dog is all right but that I'd examine him later on . . ."

"No, now! Doctor, I want you to examine him thoroughly now! I'd be frantic all night wondering whether my poor puppy was in agony all alone in this . . . this place . . ."

And then, placatingly, Madame said, casting her contemptuous eye over the silent witnesses while Ronald shoved a patronizing nose up Pa's pants leg, "Can't these people wait while you treat Ronald? Have compassion, doctor, please have compassion."

Silence from Pa except for the eloquence of his contorted features which were primitively expressive.

"Oh, doctor, isn't there anything you can do for Ronald? If he were your dog . . ."

"Madame," Pa interjected, fixing her with a malevolent look, "there's one thing I'd do if Ronald were mine . . . I'd shoot the son of a bitch!"

The quiet in the office was cataclysmic except for the unconcerned flapping of the curtains. For a second there wasn't any movement, either, except for the dancing eyes of the farmers, the heaving chest of the matron, and the inquisitive nose of the dog.

Then there was a loud gasp followed by staccato shrieks from Madame as she, with galvanic effort, crushed Ronald to her and dashed to her car. Pa and the court, still silent, went to the window to watch the touring car rip and sway down the road toward the highway.

"Well, boys," said Pa to his reverent acolytes, "now let's see, where were we?"

It was always obvious to me that Pa bore no animus toward dogs, or cats, for that matter. It was just that he valued cattle, horses, and hogs more highly. They had an economic importance, after all, whereas dogs and cats, it seemed to him, were mainly for the purpose of distributing hair on the furniture. There was a time, though, that his service to small animals gave him the ammunition for a great moral victory, a victory over the redoubtable Miss Prudence.

Prudence Breckenridge was a startling woman. Of late middle years, she had returned to Russell, after nearly a lifetime in New York and on the Continent, to care for her aged parents. Never married, she had devoted herself with distinction to the instruction of her pupils in voice at the Juilliard and in acting at her own studio in the Village. My mother was in worshipful awe of Miss Prudence when the latter reestablished herself in Russell. Her presence was formidable. She was one of those women who, early in life, one knew, had been awkward and unprepossessing but who had taken hold of herself and, by dint of will, intelligence, and self-awareness, had poured herself into another, more finely crafted mold. In later years, when we came to know her, Miss Prudence was something to behold and to hear. Her voice had the measured, deep reediness of Ethel Barrymore's and, when she became emotional, sounded like the lower registers of a cathedral organ. Her dress, for tea or dinner, was astonishing to the people of Russell. Most often, Miss Prudence would arrive in pajamas—billowing, pure silk pajama bottoms and jacket-length top of royal red, with dragons in bas-relief and blazing in their brilliant blues, greens, and purples, the whole set off by a jade necklace and rings. It was a mystery where, in this entire area, Miss Prudence had her hair done, but it was always dramatic and impeccable in its fluffed, rich brown ringlets crowning her noble brow and luminous brown eyes. And then, to the secret envy of the native matrons, Miss Prudence would smoke cigarettes, cigarettes in tinted papers, their tantalizing smoke curling urbanely from their attenuated and jewelled holders.

What a conversationalist she was! Miss Prudence would lift one of Ma's finest tea cups, pause in mid-arc and regale her hostess with fetching reminiscences of Edna St. Vincent Millay, whom she'd met in the Village (she claimed, and I believe her), or Gertrude Stein, with whom she'd developed a passing acquaintance in Paris

(I remember Pa asking later, "Who the hell is this Stein woman?"), or Bernard Shaw, whose plays, everyone knew, were the supreme works in English since Shakespeare. Ma luxuriated in the heady elixir of Miss Prudence's stories for days after one of her visits.

It was no wonder, then, that Ma was in ecstasy when Miss Prudence announced to her, as if from the temple steps, that she was intending to give singing and diction lessons to the children of Russell. Joyce, my little sister, had a voice at least the equal of Amelita Galli-Curci's, my mother fancied, and, of course, it would not do for either my brother or me, both on the high school debating team, to escape any opportunity to study dramatics and speaking with so eminent a personage. We three were promptly enrolled.

Now, God knows, the children of Russell could profit from lessons in voice and diction. But, picture a dozen or so adolescents accustomed to such locutions as "overhauls," "fusch" and "wusch" for fish and wish, and "hain't" and "druther," and you have an idea that the impediments to a cultivated speech were even more formidable than the teacher. By the time she got us to rehearsing "Man and Superman," the very reading of which, let alone its comprehension, was as easy as teaching a Hampshire boar to crochet, Miss Prudence had lost the game. However, before that time came and she knew her defeat was both devastating and irreversible, Miss Prudence came to dinner.

Miss Prudence fixed a challenging eye on Pa at the head of the table and said in her throaty and measured way, "You know, Doctor O'Brien, I wonder whether the parents and children of Russell can possibly comprehend how fortunate they are that I have settled in their midst?"

She paused to let Pa ponder the question, while Ma purred as she handed the sterling creamer to Miss Prudence.

"Doctor O'Brien, if I were in New York I would be charging fifty dollars the half hour for my lessons. And I should doubtless have a waiting list. I suppose that if I were in Hollywood, it would be quite proper for me to ask—and to be routinely granted—one hundred dollars the half hour."

There ensued a longer pause while Pa reflectively busied himself with spooning heavy cream into his coffee.

"But in Russell, my dear Doctor O'Brien, my charge is a scant two dollars the half hour."

Pa considered Miss Prudence's pronouncement about the same way a wheat farmer would have regarded a lecture on agrarian aesthetics by a professor from the Sorbonne. He sipped his coffee silently for a minute, gathering the forces within his huge frame, and then he spoke, his flat Kansas tone nasal as a parrot's, deliberately exaggerated for effect. It cut across the table like a rasp, doing tearing violence to the deep velvet fabric so recently spun from the lady's mouth.

"Wa-a-a-l-l, Prudence," he drawled, "they's a little operation veterinarians perform on female dogs. If I was in New York I reckon I could get fifty bucks for it."

Pause.

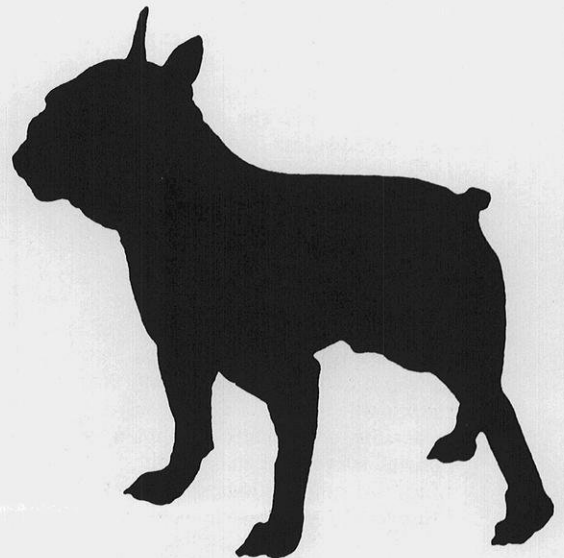
"If I was in Hollywood—who knows—I could probably get away with a hundred, maybe two hundred."

Interminable pause. Miss Prudence was staring dumbly at him, in her eyes a foreboding of humiliation. Ma was silent. Her lips had lost their blood.

"But here I do it for free. Because I like the kids."

There were perfunctory *thank-you's* and *good-bye's* from Miss Prudence and a forlorn wretchedness all over Ma's face.

The door closed behind Miss Prudence, and she hurried home unaware of the uncaring infinitude of stars in the soft Kansas night and the unconcerned droning of uncountable cicadas in the grass and trees along her path. It was then that Ma let her anguish loose upon the household. But, unaccountably to me at the time, a half-crying laughter succeeded the wailing. I was in no way prepared for the protracted, devilish laughter that at last came from both Ma and Pa. "I guess she had it coming," Ma said. I fell asleep on the couch, happy. □





In my view. . .

*Photographs of the Madison campus were taken about 1915 when the university—and possibly its problems—were smaller*

## THE UNIVERSITY OF WISCONSIN SYSTEM IN THE 1980s

Joyce M. Erdman  
President of the Board of Regents

Recently the legislature and the governor have been trying to outdo each other in helping the university. First, the governor declared that the UW System is second to none in the world . . . he slashed 4.4 percent out of our current budget. Then the legislature came along; seeing us mortally wounded, the members shouted, "We will save you!" . . . and somehow or other, several more million dollars were taken from us. Meanwhile in Washington, our President wanted to be included in the act. He, too, will help us. He will give us more local control. And by the time the dust is cleared we have millions less for scientific research, for student aid funds, for public radio. This is a difficult time to be in education, surrounded by so many champions of education.

But this fiscal crisis will pass; it will be weathered. I would turn instead to the future and look at the University of Wisconsin from the longer range of planning for the decade. This view cannot be from the vantage point of a single constituency, as faculty or students or women or minorities or even, for that matter, from the Madison campus alone; it must be from the overall system-wide view of public

higher education in Wisconsin—post merger.

Merger has been a success. To paraphrase John Donne, "No institution is an island unto itself." We are a part of the whole; our students transfer from one campus to another; our faculty participate in countless system-wide studies, addressing system-wide problems; our library facilities are a splendid example of inter-university cooperation for the benefit of all. But most important, students all over the state have equal access to a quality education. At the same time the bright luster that shines from the Madison campus has not been dimmed.

In the fall of 1980, at the memorial service for E. B. Fred, Edwin Young said that one of President Fred's considerable achievements was not only that he helped the regents discover what a university was all about, but also that he helped the faculty understand the regents. Regents come to the University from the outside world with virtually no knowledge of the academic community, but empowered to set policy and to establish direction. Occasionally after a few years' acquaintanceship, they may rashly undertake a critical examination of the educational enterprise. With this implied caveat, I ask

indulgence as I turn to the problem of how we can maintain the quality of our education in this present decade. There is no special priority to my listing or even completeness . . . I'm sure that other essentials could be added. I am not discussing education in general; I am talking pragmatically about Wisconsin and how we must prepare for the future.

First we must close the educational gap between what we have and what we need. There is no doubt that education has made giant strides in this century. In 1900, less than ten percent of the children of high school age were in high school. Eighty years later, close to ninety percent of all children are in high school. But does this extension of schooling on such a quantitative basis warrant our saying that we are now engaged in educating a whole people? It is unfortunate that the qualitative level obtained by the products of our secondary schools does not remotely resemble the ideal of an educated people. Even as more and more students finish high school, so more and more enter our universities, assured by their teachers that post-high school education is their birthright, their entry into the good life.

But they come unprepared. Indeed, one-fourth of all UW System freshmen need help in the basic skills. All of us are aware of their shortcomings in writing, in reading, and in the mathematical skills. Their lack of familiarity with Shakespeare and Shelley, with Whitman and Wordsworth, with T. S. Eliot and Emily Dickinson, is not just depressing because we can't share a common joy in our heritage, but because they can't build on past achievements in expressing the aspirations of their lives. Whatever the cause for this deplorable state—whether it is the rank weed of our culture today, television, rampantly crowding out books and conversation and thought; or whether it is the inadequacy of our schools of education which may be sending out teachers unprepared in substance and in inspiration; or whether it is the child-directed curriculum emphasizing the pleasing self-image and the “learning can be fun” phenomenon—our task now is to take these young people and in four years graduate men and women who will be assets to society.

The recommendations of the Basic Skills Task Force which presented its report to the regents in May, 1979, have already begun to be implemented. At the most fundamental level, the reading and writing laboratories are already producing results, but greater progress could be made if faculty in every discipline would demand grammatically correct, well-expressed term papers and essay examinations which force students to summarize succinctly the essence of what they have learned. Language is basic to the success of our educational enterprise; we

must not allow our standards to become eroded by popular acceptance of this growing semiliteracy.

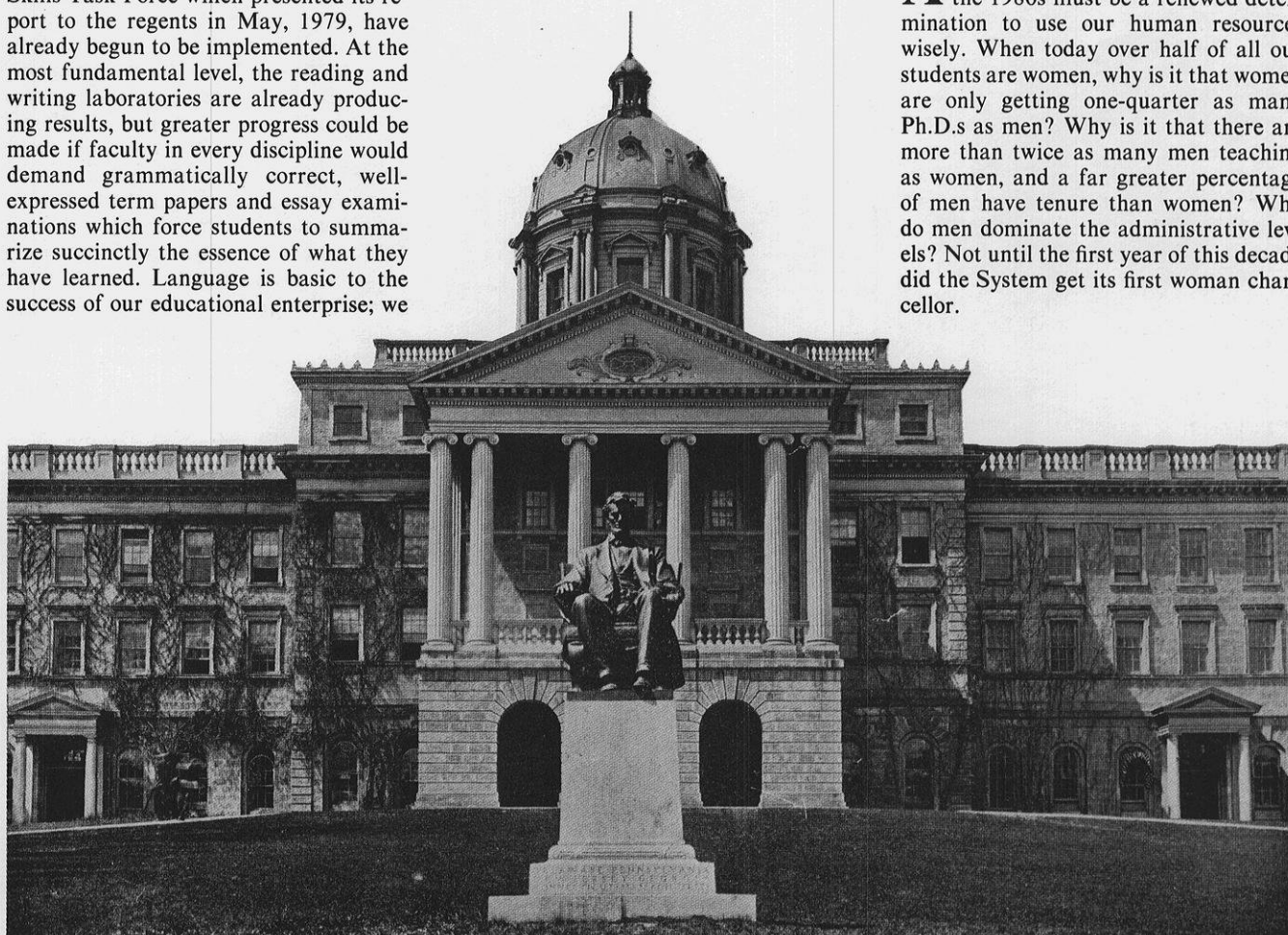
Second, if the quality of Wisconsin education is to be maintained in the eighties, we must constantly demand excellence of ourselves and our institutions and, while adapting to change, retain the basic values of discipline and hard work and academic integrity. As an illustration, when I am told that a proposed sexual harassment policy is not needed, that such a policy could be used to destroy the accused, that it could be used to destroy free speech, I will acknowledge the need for extremely careful study and formulation. Yet I will welcome that sense of freedom when students and staff alike know that they will be recognized by the quality of their work, not by their acquiescence to unwelcome overtures. To deny the unfortunate reality on our campuses of the existence of sexual harassment, whether verbal or physical, and therefore not to take steps to eliminate

the problem is to demean the entire educational endeavor and to put back the progress toward educational equality as well as toward educational quality.

In raising our horizons, we must continue to insist that women and racial minorities be welcomed into all fields of academic effort. I hardly need say that women and minorities still number far below white males in instructional programs of agriculture, the sciences, engineering, math, law, and business. If the University is to provide Wisconsin with an educated citizenry, we must see to it that balance and equal opportunity are made living realities.

Further, we must ensure that our university offerings not only retain but expand their solid core of a strong liberal arts underpinning. Our Wisconsin graduates, no matter what has been their major, must take away with them that rounded outlook and easy friendship with the arts and letters that make life so much more enjoyable and comprehensible and workable.

A third aim of Wisconsin education in the 1980s must be a renewed determination to use our human resources wisely. When today over half of all our students are women, why is it that women are only getting one-quarter as many Ph.D.s as men? Why is it that there are more than twice as many men teaching as women, and a far greater percentage of men have tenure than women? Why do men dominate the administrative levels? Not until the first year of this decade did the System get its first woman chancellor.





Much the same situation applied to black students and staff, only it is worse. We have failed abysmally to utilize this pool of untapped and often undeveloped talent. The minority/disadvantaged five-year goals which the regents established in 1976 will not be reached in 1981. The System was to have at least a five-percent enrollment of minority students; they would not be in a revolving-door situation

as has been true for some in the past; they would graduate in a wide spectrum of disciplines. It is possible that there exists in our liberal academic community a widespread discrimination against women and against blacks, based, of course, not on the vulgar theories of sexism or racism but, in part, unconsciously no doubt, on the consensus of peer review that these newer applicants do not represent the

ideal of the profession. I am sure that none of us would want to see favoritism granted to women or to minorities purely in the interests of rectifying past inequities; we know that such criteria would only harm the university and our own cause as well. What we hope to see, however, are hard, fair judgments made on merit, on ability to create, on research capability, on that certain skill to transmit the electrical spark of learning.

Dean George Sellery said some time ago (as a matter of fact, when he was working to oust Glenn Frank as president), "Wisconsin is a faculty university." We take pride that this is true today for this gives Madison a strength that no administration can equal. Yet, in coming years, we must hope that this faculty university of ours will become stronger by utilizing all of its heterogeneous human resources.

Fourth, we must use our fiscal resources more wisely. I am aware that I am approaching a somewhat sensitive area, for each of you knows of departments needing a broader base of funding; we know also that the salary structures are not always adequate or equitable. But given the tenor of our times, when financial crises are commonplace, can we not all determine that in our own worlds of responsibility we will provide an even more critical stewardship over the funds we are allotted? How much further, I wonder, would university funds extend if we would assess every expenditure as if it were actually coming out of our own bank accounts?

Obviously, this individual approach can only supplement a wise overall audit and allocation of our resources. This audit would spotlight both the strong programs, which need further support, and the weaker ones, which have accomplished their purpose. It is essential, in maintaining the quality and the diverse missions of all our institutions, that we do not allow ourselves to be spread too thin. We cannot be all things to all people. We cannot teach everything.

All this implies that, in light of changing conditions, we must make hard decisions. If, for example, we should continue to experience a decline in the real dollars we have for educational support—whether through reduction in state or federal appropriations or through the erosion of continuing inflation—then we must elect to limit enrollment as well as to eliminate programs. This will not be a pleasant decision, affecting as it does students, faculty, and staff, yet in the larger



view, we will be preserving present excellence in limited areas rather than certain mediocrity in many. We can only maintain quality when we marshal our finite material and human resources with infinite care and wisdom.

We come now to the fifth essential condition of a quality education in the 1980s. We must improve and expand our lines of communications with the citizenry at large, including and especially, the legislature and the chief executive of Wisconsin. We are fortunate today that we have followed President Van Hise's dictum that the university and the state shall both be the richer for a continual interchange of faculty members back and forth between both ends of State Street. Yet, the story of our needs and our achievements that we must tell to the legislators is never finally completed nor does our audience remain the same for very long. We are almost forced to reinvent the wheel every two years at biennial budget time. Time after time, demonstrated needs in one institution, in one college, in one program, are not funded, and who is to say what we suffer from the loss of a program we never knew? For example, when \$600,000 is denied for programs to increase the rate of academic success among minority students, I wonder how many potential black students never get that extra boost they need to start them on the long, hard road out of the Milwaukee ghetto. I wonder how much more society will have to pay for this loss. For whatever reason, we have not been able to convince members of the legislature of the vital necessity of many of our programs. The cost of education is often considered too high, but how much more is the cost of our ignorance?

We know how long it takes to build up an excellent department with faculty covering all major areas of concern, yet Wisconsin often finds itself badly out of competition with other states when it comes to faculty salaries. (It is said that the most attractive fringe benefit of the UW-Madison is Lake Mendota.) We are teaching more students today with fewer faculty members than ever before. How much longer can this go on before we see a serious diminution of academic quality? The governor, members of the legislature, newspapers, and alumni groups should all hear from us. We should not be modest. There are many people who would support the University System if they only knew our needs. One of the recent recipients of Senator Proxmire's Golden Fleece awards summed it up when he said ruefully, "Often as scientists we are guilty

of not communicating with the people whose tax dollars support our research."

Six. In the coming years, we must do all we can to improve and expand shared governance. The heartbeat of an educational institution is tuned to the regular participation of all of its faculty members in the democratic decision-making processes on the departmental, the divisional, and the all-university levels. Here, the privilege of the professional is most esteemed, for it is the tenured members of the university community who act as management in deciding departmental offerings, hours and conditions of teaching, and remuneration of individual members. The recruitment of administrators from faculty ranks and the constant awareness and monitoring of administrative authority help to guarantee the reality of genuine faculty governance.

Yet, where executive fiat has superseded faculty prerogative, where the long tradition of academic self-rule is unknown, where leadership is limited to the accepted few, then frustration and discontent may give way to searching out alternate methods of university government. Collective bargaining brings with it the unionization of faculty, the clear line drawn between labor and management, the aggressive struggle for increased remuneration, the possibility of strikes; all these must be carefully scrutinized in relation to the gains promised. Clearly, our existing Madison faculty governance structures might well transmit the best mechanisms and inspirations to sister institutions within the System where commitment to and understanding of shared governance is not strong. All members of the Wisconsin academic community, working together under a truly democratic umbrella, could bring a new sense of quality education to the state.

Seven. We must guard our freedoms. This, like so many of the other essentials for a quality education in the 1980s, covers an enormous area which somehow must be safeguarded. We think we are beyond the book burning censorship threats of earlier years, and yet, as a regent, I can attest to the existence of a minority of good citizens who now and then become sufficiently outraged to write to the Board requesting that we "do something" about what a professor teaches or a student newspaper prints. But here, generally, we are on safe ground and our

rights are fairly secure. But what about a professor who refuses to divulge to the court the deliberations of a departmental committee on the question of denial of tenure for a qualified woman? Equal rights seem to be in basic conflict with the right of confidentiality of faculty governance.

There are other freedoms at jeopardy. In the name of accountability, our staff must account for their time and their effort via the personnel activity report. The red tape mounts up. But, even as we cry out against the bureaucratic entanglements, we, ourselves, call for more studies, entailing more forms, more time-consuming hearings, more reports. Are the questionnaires, are the surveys essential? Are the reports being read? Will they tell us what we truly did not know before? Will they point to better ways to proceed? Are these results worth it? How sternly we scrutinize our red tape requirements, attempting always to eliminate all but the barest paperwork, will aid in retaining good faculty members, in using them to the best of their abilities and in preventing the build-up of frustration and pressure in the groves of academe.

I suppose I could go on adding to this grocery list of necessary prerequisites to maintaining educational quality in the eighties. But I'm reminded of a small quatrain by E. B. White: "When I arise in the morning, / I am torn between the twin desires / To reform the world and enjoy the world. / This makes it hard to plan the day." We do have to balance out what is ideal and what we can actually make work.

In the 1980s in Wisconsin, we must try to (1) close the gap between the present quantitative offerings to the students and the needed qualitative education; (2) expand our educational horizons and raise our educational standards; (3) use human resources wisely; (4) use fiscal resources wisely; (5) expand communication with the citizenry, especially those citizens who might be the governor or members of the legislature; (6) improve faculty shared governance; (7) cherish and protect our freedoms.

Of course, there are difficult times ahead. Of course, this is not the best of all possible worlds. The economic forecasts are gloomy; the international scene is tense; the Third World is smoldering; but here at the University of Wisconsin we must tend our own garden. And we must see that it flourishes. In the years ahead, we can bring forth an educational harvest of enduring value which will contribute mightily to succeeding generations. □



# WINDFALLS



## Paperwork

By Arthur Hove

It should come as no great surprise to anyone. Recent studies by Denise Schmandt-Besserat on the origins of writing (which she believes began in the Middle East as early as 8,500 B.C.) indicate that the first forms of written communication had to do with the keeping of agricultural records. Such scholarship confirms that the earliest known examples of writing are not of great historical or literary significance, but the everyday instruments of bureaucracy.

Little progress has been made in the intervening millennia—even though our records are currently kept on paper, or stored as electrical impulses on microchips, rather than inscribed on clay tablets. Through the centuries, paperwork has become the matrix of our lives. So much so that it is a cliché to point out that paperwork often dominates our daily affairs. And yet it does. It gives people a living and something to do—those who create it, those who must respond to its persistent demands, and those who try to do away with it.

Politicians can initiate or sustain careers by railing against the excesses of paperwork. Jimmy Carter, recognizing how extensive the paperwork epidemic had become, created a commission to look into the problem. Our current President mounts a more frontal assault—eliminate the agencies which produce paperwork

and, ipso facto, the problem goes away.

Perhaps.

But the prospect is not all that promising—particularly since a distinctively human tendency toward creating a written record has been with us for more than ten thousand years, if Professor Schmandt-Besserat's arguments are correct.

From raffle tickets to orders for diagnostic health procedures, a piece of paper is invariably required if you want something done to you, for you, or if you simply want to be left alone. Claim checks are an essential piece of paper to redeem items from repaired shoes to automobiles in parking lots.

In countless other transactions, if you don't have the right piece of paper, you could be out of luck. Many business deals are closed with the cheery assurance, "Everything will be okay as soon as the paperwork goes through."

This is only a small segment of the mosaic. Paperwork is necessary if you want to be certified to drive an automobile or operate a tavern. Pieces of paper are regularly used to confirm identity and station in life. The totalitarian nightmare is to be caught without having one's papers in order. Democracies may consider themselves more liberated, but pity the poor citizen who does not have the proper paperwork when it comes to fitting into a proper niche in society, or getting something from government or business.

Subtle and sometimes egregious forms of tyranny rise out of the paperwork we visit on our citizens in the name of freedom, truth, and light. And we do it with a willfulness that is frightening in its earnestness.

Associated Press writer Saul Pett, in a recent article bemoaning the astounding growth of American government since the founding of the Republic, commented: "Americans who complain about government complain they are up to their esophagus in indecipherable forms, choking red tape, maddening detail, and overzealous bureaucrats..."

Although it may seem so, paperwork is not monolithic. It is as diverse as its progenitors. That, of course, is one of the problems. Paperwork seems to flow from no recognizable individual source. People claim they do not create paperwork. Something called The System is responsible. Unfortunately, The System has no recognizable shape, no head or tail, and certainly no brain. Therefore, paperwork emerges as a regenerative organism. It is replicated by a double helix of bureaucratic DNA that is out of control.

Some timorous souls who deal with paperwork every day recognize its lethal potential for disrupting or sidetracking their careers. As a result, they become adept at leaving a paper trail in the file to justify their actions and make sure they will never be accused of demonstrating the slightest initiative or other such potentially heinous act. These people recognize there is something about a piece of paper that is difficult to ignore—those bills that arrive with relentless regularity, the summonses from official bodies, correspondence from familiar people or strangers. Whatever it is, the paper is there. Something must be done. Responses are demanded; action is required. If the particular piece of paper is ignored, another one appears to take its place and serve as a reminder that the previous one has not yet received the proper response.

Relentlessly, the paperwork piles up. It is measured in tons and miles. The dilemma becomes what to do with it all. The common sense approach is to say, throw it all away. But even that presents problems. It sounds easier than it actually is.

Ralph Keyes, in a recent *Parade* magazine article, noted police in San Francisco warn "stores and private citizens alike about the danger of putting financial records in their trash... Bay Area criminals, it seems, rummage through garbage cans for credit receipts with card numbers they can use to order merchandise by phone."

At the same time, Sylvia Porter advises small business proprietors that keeping records longer than necessary can be costly. "You're wasting expensive space by using it to store business records much, much longer than any government or legal requirements demand... approximately ninety percent of all records based solely on business requirements are needed for less than six months. Even more startling, ninety-nine percent of all the records are needed for less than one year."

Those with doubts about the requirements can gain instruction by consulting the *Guide to Record Retention Requirements, Revised as of January 1, 1981*, a volume whose index, "numbering more than 2000 items, lists the categories of persons, companies, and products affected by federal record retention requirements."

Nevertheless, our uncertainties and suspicions lead us to cling to pieces of paper through a lifetime. Periodic inspections of attics and other hiding places will certainly uncover boxes of cancelled checks, paid up loan agreements, and tax returns. We are reluctant to part with such documents because we fear the minute we do there will be that knock on the door or the letter in the mail demanding proof that such and such a debt has been paid or a particular obligation has been met. Failure to produce the proper evidence will result in dire consequences.

An annual reminder of the need for comprehensive paperwork comes at tax time. Pity the poor return filer who chooses to itemize deductions and does not have sufficient paperwork to justify claims that certain deductions are legitimate.

Those caught in the web of paperwork we have woven for ourselves recognize the nature of the dilemma. And yet we have to be periodically reminded of the appalling enormity of the problem. The most common way of doing this is through a graphic representation, real or symbolic. Pictures appear in newspapers or magazines showing government warehouses crammed with carloads of records. Statistics are regularly trotted out on the number of trees that will be sacrificed to feed the Rabelaisian appetites of the papermongers. Someone notes for dramatic effect that if all the forms we generate annually in this country were laid end to end they would stretch to someplace like the planet Tralfamadore and back.

Staggering abstractions, interesting for their brave efforts to point up the nature of the beast, but actually they are of little help in getting to the root of the problem.

The Kafkaesque paranoia which is a familiar byproduct of paperwork presents an interesting paradox. On the one hand we recognize that the more people know about us through what we set down on paper, the more potential control they will have over our lives. On the other hand, we acknowledge that perhaps the only tangible record of our existence is that which can be drawn out of the seemingly endless sequence of forms and documents that chart our lives from birth certificate to death certificate.

Such evidence can be of extreme importance to historians and cultural anthropologists. The recently published Lisle letters, edited over the past fifty years by Muriel St. Clare Byrne, present a comprehensive picture of life in a Tudor manor house gleaned from letters and papers which touch on everything from household expenses to political intrigue in the Court of Henry the Eighth.

The dilemma for the future historian of the present age will be how to plow through the incredible accumulation of documentation that has been created by a society and government hell-bent to know everything there is to know about its citizens.

We may be rounding a corner, however. Prophets extolling the virtues of technology claim the days of paperwork are coming to an end. The road to the future will be paved with microchips. A large portion of the transactions that now require pieces of paper can be handled by bytes of information pulsating over wires to be stored in data banks. This will reduce the bulk of records and, with the assistance of computers, make specific records eminently more retrievable and manipulable.

The prospect of this revolution is encouraging. But it also has its dark side. For all we curse it, the very essence of paperwork is its relative tangibility. Even though paper can be burned, shredded, or simply turned to dust, it is something we can hold in our hand as testimony to its existence.

Something carried along by electronic impulse is less certain, more suspicious. We are apprehensive about those growing data banks that know more about us than we do. We feel uneasy about the possibility that somewhere, unknown to us, there are machines quietly but efficiently manipulating data and thereby influencing our lives.

Better to have the information on a piece of paper, where you can do something about it—like wave it under someone's nose if you have to.□





## BOOK MARKS/WISCONSIN

**NORTH OF ATHENS** by John Judson; Spoon River Poetry Press, Peoria, Ill. 61655, 1980. 63 pp. \$3.95.

**By Sara Rath**

John Judson, award winning poet and author, is on the faculty of the UW-LaCrosse. He is also the founder, editor, and publisher of *Juniper Press*, and *Northeast*, a literary magazine that has been chosen as one of the top five in the United States.

Judson's poems have been widely published. In this volume, his eighth, Judson's poetry is memorable not only for its clarity and precision, but for the vivid imagery in the portraits he creates.

*North of Athens* is populated with such characters as Michael Butler, "The Button Man": "Moon eyes is what I cut. . .out of clam shells." And "Martha Foley who worked next to me for seven years / until she grew so big her chair stood back / where her bi-focals couldn't focus where they ought / and she started trimming small pearl circles out of her nails."

In "Morgan's Canes," Judson reveals the ripeness of the pig farmer who made canes from roots: "They made for better walking, or a sure support / for conversation when talk was interrupted / by a sudden waft from overalls, or he felt / the time had come for hawking spit and pounding it / to punctuate the graveness of a point. . ."

"Russell's Octobers" speaks of "...a strange old coot who'd holler / something fierce each fall at the geese / when they flew over." And in my favorite of Judson's poems, "Of Royalty and Roper," Judson tells the joyous story of a man who "...used to write his name in the snow / when he peed. . ." and called it, "...beauty from the natural." Roper says, "Think of

it though! There in darkness, / the kidneys swelling up like painter's tubes, / containers of arcs or vivid scrolls or flowers!" Roper claims (when regarded in the local postoffice with a profound respect) "Winter is hard beauty, or / a malice meant for man, and what's he got / to counter it but style."

John Judson has style. Although a few of his poems suffer from awkward line-breaks that lack the authority of some of his earlier work, he does have a knack for creating fine little gems, cameo appearances by neighbors, family, old friends, that rest upon the retina of one's memory and take on a color, a vibrance, a kind of "beauty from the natural."

*Sara Rath is a Madison poet and freelance writer.*

**JAMES BALDWIN** by Carolyn Wedin Sylvander; Frederick Ungar Publishing Company, New York, 1980. 149 pages + chronology, notes, bibliography, index. \$4.95.

**By Pat Watkins**

The purpose of this volume is to provide an introduction to Baldwin's life and work. Half of that purpose is realized in the chronology and in the initial chapter in which the biographic and bibliographic are smoothly and interestingly integrated to provide a helpful prospective from which to view Baldwin's development. The other half of that purpose has not been as satisfactorily achieved.

The author begins well enough with the study of Baldwin's essays, which she wisely chooses to deal with by isolating their nuclear ideas and themes. This is a viable approach for the neophyte seeking an easily comprehensible key to their understanding. But, when she focuses attention

upon Baldwin's novels, plays, and short stories, the book moves rapidly downhill. The content is seldom satisfying or illuminating, and the style becomes mechanical and tedious. More than half of the volume consists of in-depth and exhaustive chapter-by-chapter summaries of each work. Quotation (apt and necessary) abounds. But, the book is marred by its plethora of mechanical details on point-of-view; narrative voice; volume, section, and chapter lengths; and epigraphs and their sources: in short, everything that newcomers to Baldwin would ever want not to know. For example, "*Just Above My Head* is a long novel, 597 pages in the Dial Press edition, and is divided into five books, the first and last the shortest, with fifty-six and sixty-eight pages. Book One is called 'Have Mercy' and is prefaced by two epigraphs. The first 'Work: for the night is coming,' is repeated as the epigraph for Book Three also. The second epigraph opening the novel is from another traditional song, about the last messianic prophet of the Old Testament [here the author appends the fourteen line epigraph]." Taken out of context, the above quotation loses some of its tedium, but repeated for every chapter, section, and part of each Baldwin book, the formulaic information has the readers convinced that they have reencountered their old friends Dick, Jane, and Spot.

The astute reader who has even the slightest acquaintance with black life in the 1920s—with its scholars, scientists, educators, professional class, and artists and writers caught up in the seething excitement of the Harlem Renaissance—cannot help but recoil at the assertion in the second sentence of the book that in 1924, life as an entertainer was "the only path blacks could pursue to success. . ."

This statement seriously affects the credibility of what follows in the roughly thirty percent of text devoted to explanation, critical analysis, or interpretation. Here we find much that is superficial. For example, in the eight page section on *Giovanni's Room*, only one is spent on interpretation and analysis. This book, while not a critical success, is pivotal in Baldwin's work, insofar as he confronts head-on his crucial theme of homosexuality, begins to explore that homosexuality metaphorically, and expands upon his intense and personal theology of the morality of love as a "state of being, or a state of grace . . . in the tough and universal sense of quest and daring and growth." But, what we learn from Professor Sylvander is that the book's problem is that the main character cannot carry its weight; that Giovanni, metaphorically black and able to face "the stink of life," is contrasted with David, who is white and cannot; and that the difficulty with the book is its simplicity and that its readers cannot be expected to accept that a homosexual affair carry the weight of human identity. The meaning and importance of that affair is passed over and little attempt is made to probe a theme and metaphor so important to an understanding of Baldwin.

For readers seeking an introduction to Baldwin, the chronology and the biographical chapter are helpful and well done, as is the chapter on the essays. The chapter on critical sources and the bibliography are excellent, though perhaps more suited to those beyond the introductory stage. Readers seeking summaries of Baldwin's works will find these detailed, complete, and well done. But, those seeking criticism, analyses, and interpretations leading to a better understanding of Baldwin and his achievement might do better to look elsewhere. Alas! poor James. He deserves better than he received here, and so does the reader.

*Pat Watkins, assistant director of New Student Services and lecturer in Afro-American Literature at the UW-Madison, has published poetry, articles, and study guides.*

**ARCHITECTURE AS NATURE, THE TRANSCENDENTALIST IDEA OF LOUIS SULLIVAN** by Narciso Menocal; The University of Wisconsin Press, Madison, 1981. 232 pages, illus., \$22.50.

By Gordon D. Orr, Jr.

If one expects a biography of Louis H. Sullivan and a complete listing of his works, then the books by Hugh Morrison and Willard Connelly remain the source.

If, on the other hand, the reader's interest is in the ideas that motivated Sullivan, then this book becomes the definitive work on him. Louis Sullivan wrote and spoke with a frequency far greater than most architects. Most of his talks, preserved in manuscripts and often published, provided the sources for Menocal's study, which otherwise would have been impossible.

Menocal has ably pieced the transcendentalist thoughts of Sullivan into the context of other writers and philosophers with comparable ideas to form an enlightening picture. The early life, the contents of Sullivan's library, and an awareness of his relationship with a few compatriots provide the basis for weaving a coherent story of his concepts of a democratic architecture—what it means and how it must spring from nature.

By introducing the thoughts permeating Sullivan's important papers and relating these to the transcendentalist thinkers, Menocal shows the basis for Sullivan's own programs. The comparison and derivations are not drawn from architectural studies, but rather from the writings of those with whom Sullivan would have been acquainted, and which became the influential sources of Sullivan's writings. Sullivan was unique in that he produced such a significant volume of articles, as well as several books that described his architectural concepts. These were his arguments to younger men in the profession whom he sought as disciples in his search for the architecture of a democratic society, and yet his voice was late and mostly unheard.

The book builds from the initial development of the transcendentalist thought to interesting analyses of Sullivan's projects, both built and unbuilt, seeking to identify the theories in the projects. Sullivan's designs were often in conflict with building utility, yet the author fairly extracts Sullivan's theories of nature from his designs. The author explores the theories in the important series of Sullivan's high rise buildings and in the less successful residential projects. It is in his bank buildings, and particularly the Farmers' National Bank of Owatonna, Minnesota, that a high point of his career can be seen—the high point in terms of expressing his transcendentalist idea.

Few books have been published that delve into the passion of the designer with the depth that Menocal's study of Sullivan does, but the material for similar studies of other architects would be harder to come by, and few architects may have been driven by such a passion to use architecture as a medium for visionary so-

cial ideals.

Menocal's book is a scholarly treatise that may not appeal to the customary user of architectural books; rather it must be seen as a serious study of the philosophical basis for Sullivan's work, and that it does with exemplary thoroughness.

*Gordon D. Orr, Jr., FAIA, is the UW-Madison campus architect and has written occasional articles on architects, architectural history, and the outdoors.*

**FIGHTING THE PLAGUE IN SEVENTEENTH-CENTURY ITALY** by Carlo M. Cipolla; The University of Wisconsin Press, Madison, 1981. 123 pp. \$13.50 cloth, \$4.95 paper.

By Guenter B. Risse

The University of Wisconsin Press has published a slender volume containing the three Curti Lectures delivered by Professor Cipolla in September 1978. Primarily an economic historian, the author is widely known for his recent case studies of plague in sixteenth- and seventeenth-century Italy (*Christofano and the Plague*, 1973; *Public Health and the Medical Profession in the Renaissance*, 1976; and *Faith, Reason, and the Plague in Seventeenth-Century Tuscany*, 1979).

In the present work, Cipolla continues his practice of reporting from the detailed and valuable archives surviving in northern Italian cities. His first lecture sets the stage by summarily explaining the prevailing seventeenth-century views on plague as being a "miasmatic" disease caused by poisonous particles arising from the malodorous decomposition of organic matter. With attention diverted away from rats and their fleas, merely considered inevitable but relatively harmless nuisances of life, most efforts designed to cope with the effects of the scourge lacked the necessary focus to be successful.

The second chapter, in turn, reveals the existence of a vast communication network among the various northern Italian states regarding health conditions in their respective dominions and the adjacent Mediterranean region. The study concentrates on a series of exchanges between the Grand Duchy of Tuscany and the Republic of Genoa that occurred from June to September of 1652, since there were fears that plague had broken out on the island of Sardinia. The orders and reports convey an interesting glimpse of Italian politics and health conditions in Genoa. Included is a short-lived Tuscan proposal for international cooperation to gather epidemiological intelligence, in-



volving Genoa and Tuscany, Rome and Naples.

Finally, the third lecture constitutes a fascinating account of the plague epidemic that afflicted the small Tuscan city of Pistoia (population 8,000) in 1630–31. Extant records allow us to compute the financial expenditures incurred by the local health board in fighting the disease, while pesthouse statistics reveal—albeit partially—the impact of plague on the poor sector of the population.

The author has provided readers with two appendices. The first one contains sixteenth- and seventeenth-century descriptions of the plague, its symptoms, diagnosis, clinical course, and epidemiology. Mortality figures for selected Italian cities during the epidemics of 1576–77, 1630–31, and 1656–57 are given. The second appendix is an English translation of the 1652 agreement reached among the parties in Tuscany and Genoa for joint quarantine action. A selected bibliography is included.

Cipolla's case studies will be of interest to readers already engrossed in the history of epidemics and their impact on society. Despite the book's title, however, no comprehensive picture emerges nor, I believe, was any intended. These findings are merely building blocks for the gradual construction of a framework that will illustrate the development of a public health bureaucracy in northern Italy under the constant threats of infectious disease.

*Guenter B. Risse is professor in the departments of history of medicine and history of science at UW-Madison.*

**THE WEST END: MERRILL PARK, PIGSVILLE, CONCORDIA** by John Gurda; University of Wisconsin System Board of Regents, 1980. 143 pp. \$4.50.

**By Terry Shoptaugh**

*The West End* is John Gurda's second contribution to the Milwaukee Humanities Program series of neighborhood studies. As in his earlier work, *Bay View*, Gurda demonstrates a fine talent for recreating the essence of a Milwaukee neighborhood, in all its many details and facets. Gurda's skill is, in this case, applied to the histories and present conditions of the west-side communities, Merrill Park, Pigsville, and Concordia. Made up of three areas as diverse in culture as any in the city, the west end is here brought to life.

Merrill Park, a neighborhood born in the success of the Chicago, Milwaukee, and St. Paul Railroad, is the largest and most cohesive of the three areas. Almost

from its beginning, Merrill Park was dominated by the Irish, although they actually were a minority of the community's total population. For decades Merrill Park's spiritual and community center was St. Rose parish, the focal point for the area's Irish. Gurda deftly shows how the Irish imparted an indelible mark on Merrill Park, but at the same time he does not neglect the contributions of other ethnic groups. A well-balanced portrait of the neighborhood is the result.

By contrast, Pigsville is a tiny community, more rural than urban through much of its existence; its very name is shrouded in mystery and legend. Pigsville was divided largely between Germans and Eastern Europeans. Consequently, the community's culture is rich and its sense of identity a matter of fierce pride. Unfortunately, these two normally laudable elements have recently combined to oppose the movement of blacks into the area.

Concordia is the least cohesive of the three west-end neighborhoods. A suburban retreat for Milwaukee's wealthy originally, Concordia has long since lost its affluence and, to a great extent, its identity. Today it's a crazy quilt of absentee-owned apartment buildings and old, stately houses, in various states of disrepair.

Without a strong sense of community, but with too few resident owners and a regular turnover of inhabitants, Concordia's future is uncertain at best.

In fact, the one place in which Gurda can be faulted is in his somewhat unguarded optimism. He admits that each of the west-end neighborhoods faces serious challenges in coming years, the kinds of problems that all old urban neighborhoods are facing. In each of these three cases, however, Gurda seems confident that community spirit will eventually overcome the difficulties. He fails to give attention to the declining financial support for such areas. Indeed, the recent federal budgetary activities pose a threat to the Milwaukee Humanities Program itself.

This is but a minor drawback; the book, as a whole, is excellent. Gurda makes fine use of his sources, especially the interviews of local residents which are presented in unpolished and memorable form. *The West End* is nicely illustrated with maps and photographs, most of the latter being Gurda's own. The book is well worth the price, and one can only look forward to future contributions by the author.

*Terry Shoptaugh is a graduate student at UW-Madison.*



**PLUMS, STONES, KISSES & HOOKS**  
by Ronald Wallace; University of Missouri Press, Columbia, 1981. A Break-through Book, No. 35. 75 pp. \$9.

By **Gianfranco Pagnucci**

I have an idea that striking ideas is like discovering gold. After even the smallest announcement, the rush will be on at a fever pitch. A good way to discover a book is not to worry about what it is trying to say. But to discover the book. I propose this as an easy way to come to a book of poems.

Ronald Wallace's *Plums, Stones, Kisses & Hooks* is alive with possibilities for us to discover. I found a beehive of new honey, a dark cave full of myself, a world full of sickness and health, joy and sorrow, pain and the wings out of pain. The key to the possibilities in Wallace's world is in "making do." Listen to this narrator:

The roofers are talking about  
how they've brought the wrong  
materials.

The old one coughs a lump of asphalt  
from his throat. The young one jingles  
the nails of his teeth. They are  
cutting corners, making do.

Sitting in my window overhead, I  
wonder:

some dark night with the wind swearing  
it was not its fault, will my roof  
patched with syllables, break off,  
loose me from its moorings,  
leave me empty, unprotected,  
in the most unnatural weather,  
with all the wrong materials, making  
do?

("Making Do," p. 66)

Thinking about this dilemma of roofs  
I recognize from experience, I recognize  
it will fail, as I know words have failed  
and will fail. But think of the freedom to  
be gained once we allow ourselves to  
make do. The frustrations drop away and  
anything works, "making do."

When life has lost its health to Multiple  
Sclerosis "...Mr. Wallace gets a chin-  
operated motorized wheelchair" with  
which he freely hounds the nurses by  
"roaring through corridors, / bouncing  
off walls, out of control, / breaking door-  
ways, tables, chairs, / and regulations..."  
and after listening to reason and prom-  
ising to behave, when everyone has gone  
to sleep, breaking out again to "crash  
through the window / stopping only to  
watch / the last geese rising, /" (from  
"After Being Paralyzed from the Neck  
Down..." p. 16)

This is not a book full of the narrator's  
successes. But it is a book full of his

triumphs. The pain comes before and  
after the deaths and the bee stings that  
remind the beekeeper and us of our "sev-  
eral deaths." The narrator like us would  
mostly like to escape, yet as often as he  
flies away in a car or on imagined wings,  
he comes back to make do. He comes  
back a better consciousness for his having  
gone and comes back aware that there is  
a world outside of us that goes on and  
makes do as we must. Watching it all on  
TV, we found the moon to be less than  
we expected. Maybe it even lost for us  
lovers some of its magic, with the loss of  
its mystery, yet:

You land on the moon.

It is not what it seems. Just rocks and  
dust.

Still, they are counting on you.

You reach in your pockets. Luckily,  
you've brought

your plums, stones, kisses, and hooks  
with you. You take them out. You get  
to work.

(from "Restoring the Moon," p. 73)

And the moon rises again, and again and  
again it is spring.

I tell you all, you only need to be able  
to read. You will find the gold for your-  
selves in Ronald Wallace's *Plums, Stones,  
Kisses & Hooks*.

*Gianfranco Pagnucci, associate professor  
of English at UW-Platteville, is a pub-  
lished poet and cofounder of Bur Oak  
Press, which publishes The Acorn, a  
quarterly newspaper for teachers.*

**CONCEPTIONS OF SPACE IN SO-  
CIAL THOUGHT** by Robert David Sack;  
University of Minnesota Press, Minne-  
apolis, 1980. xiv+231 pp. \$27.50; \$9.95  
paper.

By **Michael Sherman**

Almost every academic discipline makes  
a claim to universality. Robert Sack, pro-  
fessor of geography at the University of  
Wisconsin-Madison, makes a good case  
for the claims of geography. His book is  
at once a thoughtful discussion of the  
goals of the discipline of geography, an  
optimistic critique of the social sciences,  
a careful interdisciplinary survey of what  
we know about how people think about  
space, and a suggestive prologue to what  
he identifies as the next assignment for  
geographers and historians. Although it  
is not always easy reading, Sack's book  
is almost always thought-provoking.

The basic problems that Sack tries to  
unravel here are how to evaluate the  
many perceptions of space that we have

as individuals and as societies, how we  
use those perceptions, and how we eval-  
uate the relationship between space and  
substance—understood both as objects in  
space and the medium through which  
perception and cause-effect take place.  
He is eager to show that the social sci-  
ences have an important role in address-  
ing these problems and in applying the  
principles that can be derived from them  
to planning human communities; but he  
is also careful to demonstrate that the  
normal language and results of scientific  
inquiry—mathematics and the formula-  
tion of laws—have yielded no truly reli-  
able results thus far for geographers.  
That is because space exists both in an  
objective, physical, and therefore mea-  
surable way, but also in a subjective way  
that eludes measurement or regularity.

Sack explores this dichotomy in the  
conception of space by setting up and sur-  
veying two patterns of thought which he  
calls "sophisticated-fragmented" and  
"unsophisticated-fused" patterns. These  
two patterns, which refer to the mental  
distance and distinction between space  
and substance, form the framework of his  
study. By working methodically with and  
through them, Sack not only shows us  
where the problems of various analytical  
methods lie, but he also reviews for us a  
wide range and indeed a hierarchy of  
ways of thought. At bottom, then, Sack's  
book is as much about epistemology as  
it is about geography, for when we ask  
how we think about space we also ask  
how we think about anything.

Among the sophisticated-fragmented  
patterns Sack investigates are the natural  
sciences, especially the physical sciences  
which represent the archetype of objec-  
tive study of the distinction and relation-  
ship between space and substance. He  
also looks at the arts—especially litera-  
ture and painting—which also separate  
space from substance but do so from a  
position of subjectivity. Although the  
study of the arts is one of the least sat-  
isfying parts of the book, Sack does ef-  
fectively illustrate his dichotomy between  
subjective and objective within the so-  
phisticated-fragmented patterns with a  
long quotation from Wordsworth's *The  
Prelude* (Book V, lines 56–139). Here,  
images of desert and sea, stone and shell,  
geometry and poetry are summoned to  
dramatize the conjunction of scientific  
and artistic thought as well as to empha-  
size their irreconcilable conflict and points  
of divergence.

Sack's exposition on the artistic imag-  
ination is also his transition to a discus-  
sion of several unsophisticated-fused pat-  
terns of thought. In these conceptions,



space and substance are in close proximity, even inseparable in the mind. Sack works his way through child psychology, cultural anthropology, history, and political theory using such diverse sources as Piaget, Levi-Strauss and Levy-Bruhl, Marx and Engels, Plato, Bacon, and Tommaso Campanella. He shows that both primitive societies and sophisticated civilizations that turn to science as their dominant mode of inquiry rely heavily on mythic thought.

It is precisely the mix of patterns in contemporary western society that intrigues and puzzles Sack. Science has failed to give us satisfactory results in the form of reliable laws of human behavior, yet Sack seems determined to find some way of combining the scientific mode with the mythic mode of thought to find patterns of thought and behavior that are both understandable and predictable. And while acknowledging that this is an extremely difficult task, he is optimistic about accomplishing it through further researches in "the socio-material context and its relationship to the conceptions of space" (p. 198). The next assignments, therefore, are to obtain "a general understanding of how socio-economic structures affect the development, articulation and degree of separation of the modes of thought" by working out "the kinds and functions of the spatial organizations of

the political economic systems themselves" (p. 198). The assignment is important for Sack because, for him, the aim of social science is application, not description. As a geographer, Sack is interested in history and anthropology mainly as tools for prying loose the principles that must be used for planning.

This is not in itself a radical conclusion, but it is an odd one in the context of Sack's book, because he is at his best in the narrative passages where he shows the diversity of human conceptions of space by retelling myths and history in crisp prose and where he shrewdly observes that the strict dualism of Levi-Strauss' structuralist analysis of myth may be formally correct but, by robbing the myths of their complexity, it robs them of their vitality, ingenuity, and variety. It appears, therefore, that narrative is essentially an unscientific but nonetheless effective way of describing the universe from a human perspective. We are left wondering about what Sack calls the humanists' criticisms of the social sciences: that they have missed "the center of the conceptual surface." Can the continued attempts of the social sciences to find laws of human behavior be reconciled with the humanists' point of departure, which Sack recognizes as an equally important goal: to "bring us in touch with the variety of human experiences, feeling,

emotions, and their symbolic forms"? Although Sack begins his book by emphasizing the problems that social scientists now have using the physical sciences, he ends by describing a bigger conceptual split between the social sciences and humanities.

*Michael Sherman is associate director of the Wisconsin Humanities Committee.*

**SOLDIERS WHEN THEY GO: THE STORY OF CAMP RANDALL, 1861-1865** by Carolyn J. Mattern; published by the State Historical Society of Wisconsin for the Department of History, University of Wisconsin, Madison, 1981. 135 pp. \$7.95.

**By Patricia Powell**

Although a Master's thesis holds little promise for mass entertainment, *Soldiers When They Go* will provide some fascinating hours for anyone interested in local history or the Civil War. The title is from Governor Randall's exhortation to the legislature to make appropriations to train and equip citizens for military life so that men would be "soldiers when they go, or there will be few of them living soldiers when it is time for them to return."

*Autumn: woodcut from A. Maynard's Farmer's Almanac, 1850*



Mattern provides a lively reconstruction of life in Camp Randall from the contemporary newspapers, the Quiner collection at the State Historical Society of soldiers' correspondence with hometown newspapers, governmental records, regimental histories, and soldiers' original letters and journals. The documentation never obstructs the picture of the soldier, whose first taste of military life is in conditions of wretched unpreparedness—barracks not constructed, no uniforms, blankets, or rifles. The officers, who were political appointees or elected by the men, often had no military experience and relied on out-of-date army manuals. Deaths in the training camp from exposure—men quartered in tents without sufficient blankets or standing guard through the night in minus forty-degree weather—or from typhoid due to inadequate sanitation “cast a gloom upon the entire camp.”

Until January of 1862, the state, which was entirely without experience, controlled all military affairs. In spite of Governor Randall's good intentions, fraud and corruption were rampant: Private caterers—said to make \$100-a-day profits—served bad beef and sour bread to soldiers who on occasion mutinied over the food. After the federal government took over recruiting and equipping troops, the soldiers themselves did the cooking and some of the camp work in addition to five or more hours of drill on the field.

We learn something about life in the state as well as at Camp Randall from soldiers' comparisons in letters back home. The ethnic makeup of the state was clearly reflected in the regiments: the 9th regiment was recruited from the Germans, the 11th from the Irish, the 15th from the Scandinavian population.

In the early months of the war when patriotism was strong, one company of the 8th regiment, the Chippewa Eagles, had as a mascot a bald eagle named Old Abe. He was carried on a special perch by a six-foot-eight-inch soldier into Camp Randall and later into battle. Unlike most of the company Old Abe came through the war unscathed. But by July of 1862, Wisconsin citizens' awareness of the tolls of the war obliterated its romance and diminished their patriotism. When Lincoln called for the state quota of 300,000 troops to be filled by draft, if not by volunteers, the resistance was strong enough among the German population to require the troops from Camp Randall to quell riots at draft registration sites. Mattern records the citizens' changes in attitude towards the war and Madisonians' changes in attitude towards the camp inhabitants as well as the changes in life at Camp

Randall during those four years.

The author does make a minor error on page one. Describing Madison in 1861, Mattern notes, “The capitol with its gleaming white dome capped the beauty of the town's attractive parks and lakes.” According to Henry R. Hitchcock and William Seale in their authoritative book on state capitols, *Temples of Democracy*, construction on Wisconsin's capitol was disrupted during the war, and the dome was not added until after the Civil War.

The story is interesting enough even to sustain the flat, academic style through the 113 pages of text. The index should prove adequate for those who will use this book in genealogical searches or to add to their store of local history.

*Patricia Powell is a Madison editor and free-lance writer.*

## Just Browsing

**ON THE TRAIL OF THE ICE AGE** by Henry S. Reuss; Raintree Publishers for Ice Age Trail Council, 2834 W. Kilbourn, Milwaukee 53208, 1981. 152 pp. \$15.50 cloth, \$11.50 paper (check or money order should include 4% Wis. sales tax plus \$1 for postage).

Congressman Reuss outlines the legislative and financial efforts to develop the Ice Age Trail, which is “to assure protection, preservation, and interpretation of the nationally significant values of Wisconsin continental glaciation, including moraines, eskers, kames, kettle holes, drumlins, swamps, lakes, and other reminders of the Ice Age.” This book celebrates the completion of the Wisconsin Ice Age National Scientific Reserve and 1000 miles of hiking and 950 miles of biking trails, which start in Door County, wind past Milwaukee, Madison, up through the north-central part of the state, then head west to the St. Croix River border with Minnesota.

Reuss devotes one chapter to the history of glaciation in Wisconsin in which he defines such terms as eskers, kames, and drumlins; one to the natural history—flora, fauna, and rocks—of the trail; and one to biographies of “Ice Age trailblazers” such as Leopold, Veblen, Muir, Wilcox, and Gale. Two-thirds of the book, however, is divided between a guide to the nine units that make up the Ice Age National Scientific Reserve and a detailed guide for bicyclists and hikers which breaks up the two trails into shorter hikes from ten to sixty miles.

I wonder if the large format (8½ by 11) will be convenient for bikers and hikers to have at their fingertips. Certainly it will be useful for those who travel by car to a specific site, where they carefully read the guide and either bike or hike a section of the trail or examine one of the nine reserve units which studied all together promise “a complete education in the effects of the last of the great glaciers to cover substantial parts of the continental United States.”

**WISCONSIN POETS' CALENDAR, 1982** edited by Tom and Mary Montag, Midwestern Writers' Publishing House P.O. Box A, Fairwater, WI 53931, 1981. \$4.95.

This calendar is an anthology of state poets, each on a six by eight inch page with room for daily appointments and notes. Each week has “a poem or a few poems which in some quiet fashion reflect upon the time marked on the calendar, which bring a particular joy or spirit to the week.” A bibliography is included to direct the reader to other works by these poets. Review readers will already be familiar with such poets as John Bennett, Warren Carrier, Iefke Goldberger, Dale Kushner, Edna Meudt, Stephen M. Miller, Tom Montag, Gianfranco Pagnucci, Marian Paust, Ray Smith, and Jeffrey Winke as well as others who contributed to the calendar. □





## Authors and Artists

continued from page 2



T. P. Stewart

Dale O'Brien

**Ann Johnson** is a former Oshkosh print-maker-turned-potter, who now has a studio in Flagstaff, Arizona.

**Jim McEvoy's** pen-and-ink drawings appear frequently in the *Review* and in the DNR magazine, *Natural Resources*. The recent exhibit of his watercolors at the Academy drew high praise from visitors to the Steenbock Center.

Jim McEvoy



**Dale O'Brien** lived on the western Kansas farm in the small town described in some of his stories when he was a boy. His father was a veterinarian and farmer. After college he lived most of his years in Chicago and its suburbs. Before coming to the Spring Green area, where he and his wife Helen have lived for several years, Mr. O'Brien was at one time director of advertising and a member of the board of editors of *Encyclopaedia Britannica*. He headed his own public relations and public affairs consulting firm and served a number of public service organizations as president. Among them have been the Society for Contemporary American Art of the Art Institute of Chicago and the Chicago Metropolitan Housing and Planning Council. He was president of the Academy in 1978.

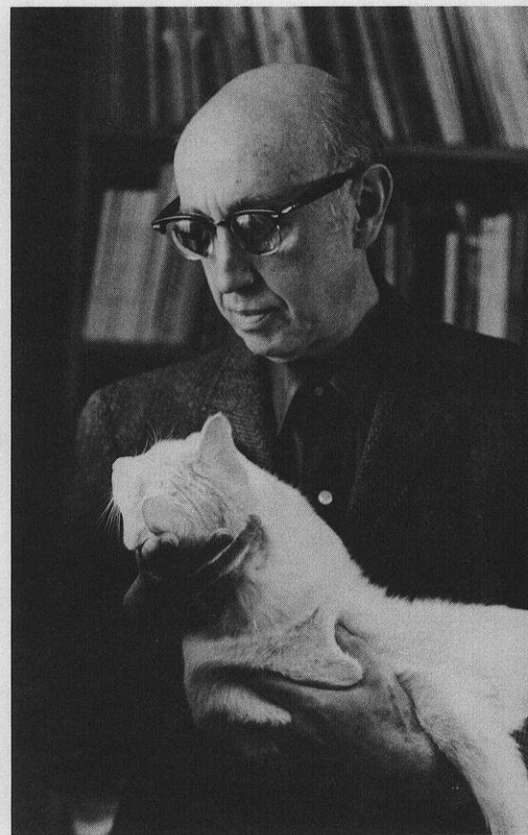
**Joyce Erdman** was first appointed to the University of Wisconsin System Board of Regents May 1, 1975, by Governor Lucey for a term ending May 1, 1982. In 1979, Ms. Erdman was elected vice president of the board. She was serving a second term when the board elected her to the office of president and made her the first woman to hold the position.

Ms. Erdman completed her Bachelor's degree at Madison in 1946 and received her M.A. in economics in 1947. She was the first woman president of the Wisconsin Student Association, serving from 1946-47.

Joyce Erdman heads the Regent Task Force on the Status of Women and has staffed the Governor's Commission on Human Rights in 1947-48 and again in 1967. She is the author of two publications, *Wisconsin Indians* and *Non-White Housing in Wisconsin*. The original version of this article was a speech presented to members of Sigma Delta Epsilon in February of this year.

She and her husband, Marshall, have a daughter and three sons.

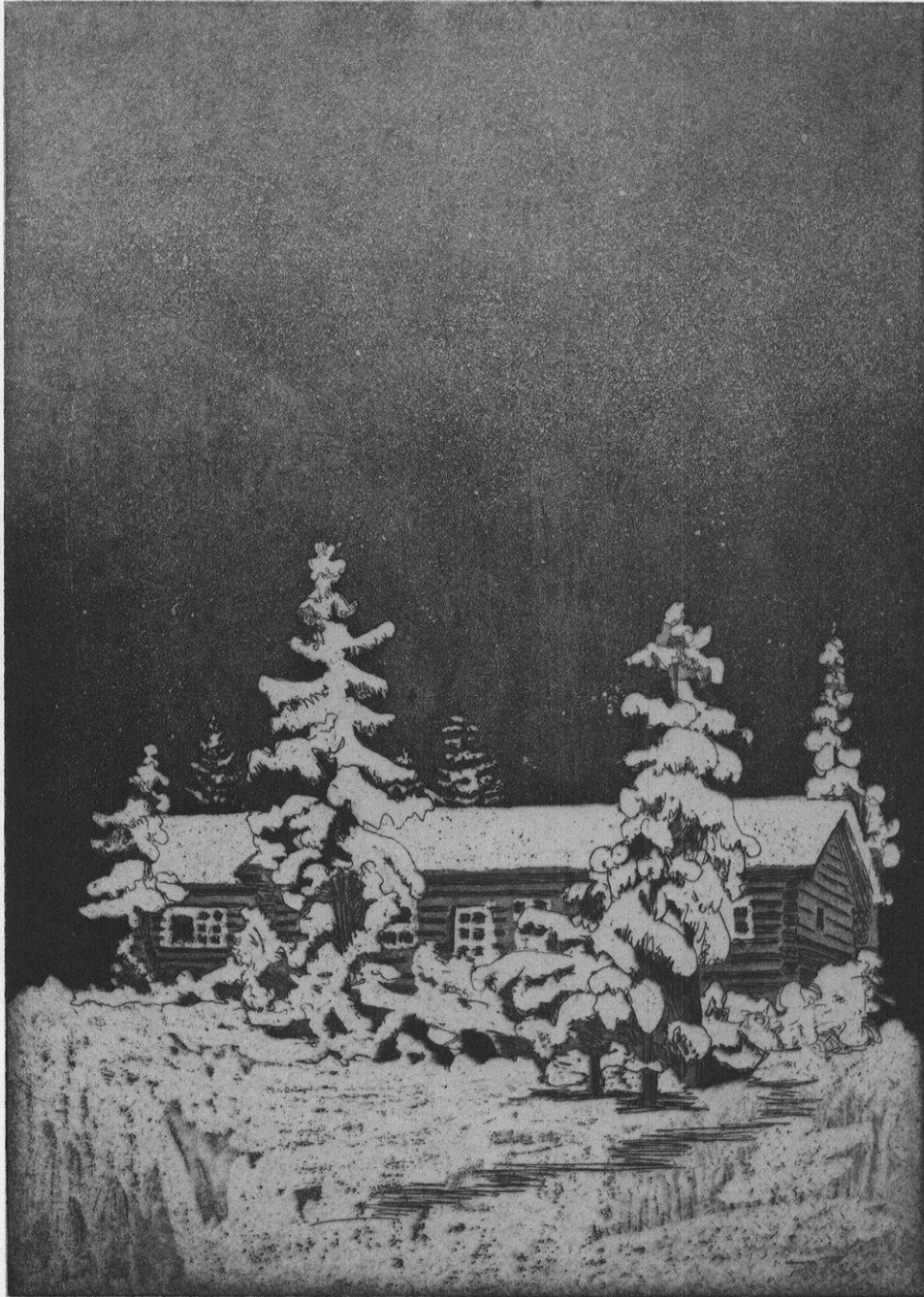
**Ellen Morris Jacobson** is a Madison freelance editor and photographer. The December 1980 *Review* cover was another in her still life series of dolls.



Felix Pollak

**Felix Pollak** studied law in his native Vienna, but after he came to this country in 1939 as a refugee from Hitler, he became a librarian. He served in the U.S. Army in World War II. For fifteen years Mr. Pollak was curator of rare books at Northwestern University in Evanston. He served as curator of special collections for the UW-Madison Memorial Library until his retirement due to visual difficulties. Felix Pollak has published four books of poetry: *The Castle and the Flaw* (1963), *Say When* (1969), *Ginkgo* (1973), and *Subject to Change* (1978). He has published in many little magazines and is currently translating the German poet Heinrich Heine for a library of German literature to be published in English.





"September Snow"

*Helij Bryschaw*



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