Great Northern Paper Company Today

1962

Great Northern Paper Company

Follow this and additional works at: https://digitalcommons.library.umaine.edu/mainehistory

Part of the History Commons

This Monograph is brought to you for free and open access by DigitalCommons@UMaine. It has been accepted for inclusion in Maine History Documents by an authorized administrator of DigitalCommons@UMaine. For more information, please contact um.library.technical.services@maine.edu.
COVER STORY

Our cover is a photograph of a cross section of a mature red spruce tree cut on Great Northern land near the headwaters of the Penobscot River. This tree sprouted from natural seeding, and its history can be traced in the growth recorded in the annual rings. The fast growth of spring produces light colored wood while summer growth produces a more dense wood and the darker rings.

After a period of relatively slow growth, probably in competition with other spruce and taller pines, this tree was released at about the age of 40 by the cutting of the pine. Progress was rapid for some years until competition from its neighboring spruce slowed growth gradually. Later, a severe spruce budworm attack in the area resulted in a period of 7 years marked by slow growth. The tree survived, however, and continued to earn regular dividends until the fall of 1960. It was then selected for cutting by a Great Northern forester and marked as a mature tree, to be removed to make room for the new growth which will replace it.
FOREWORD

To those who have known or worked with the Great Northern Paper Company over the past sixty-odd years, the image of the company has always been unmistakably clear. The largest United States producer of newsprint, it has been known to be independent, financially sound, fair in its relations with its employees, customers, and suppliers, mindful of the interests of its stockholders, interested in the welfare of its communities — and a tough competitor.

During the past decade there has emerged a greater Great Northern, retaining all the attributes that have sustained it in the past but moving toward the future with new ideas, approaches and techniques.

The purpose of this booklet is to present, briefly, the industry background, the history, the properties, the resources, the plans and activities, that exemplify this old company with new ideas — Great Northern Today.
Paper: Partner in Progress

Of all man's many achievements that have influenced the form of society, three accomplishments stand out above the rest: the discovery of the uses of fire, the invention of the wheel and the development of writing.

From the first two stem the material and physical improvements that have marked the progress of human society. From the third has come the means of spreading and passing on the benefits of the mental and intellectual progress of civilization.

Early methods of reproducing writing were crude and laborious. They evolved from scratching upon stone and wood to marking on soft clay or wax, and finally emerged as true writing on thin membranes of animal skins or woven vegetable fibre.

The invention of paper, the first practical writing surface available in large quantity, spurred improvements in the methods of reproducing words and pictures. With the advent of printing from movable type, in the 15th century, men at last could reach and influence the minds of large numbers of other men through the written word. Thus developed what is, even in this electronic age, the most effective means of mass communication; without paper it never would have been possible.

Paper was invented by the Chinese more than a thousand years ago, but until the last century it was made by hand, mostly from rags, old rope and similar sources of vegetable fibre. It was scarce and costly.

The first paper mill in America was built

---

GROWTH OF THE PRINTED WORD

Consumption of Printing Papers in the U. S. in the 20th Century

at Germantown, Pennsylvania, in the year 1690; previously all paper used in this country had been imported from Europe. By the time of the American Revolution, the paper industry was well established in Pennsylvania, New York, Connecticut, and Massachusetts. Expansion was encouraged by duties on imported paper, and by 1810 more than two hundred mills were in operation.

All of these mills made paper by hand, one sheet at a time, the production of most mills being measured in pounds per day. A short time later, machinery was invented which could produce a continuous sheet or web of paper. This rapidly led to increased production, although the industry was handicapped for a long time by the shortage and cost of raw materials.

About a hundred years ago it was discovered that wood fibres could be separated and made into a pulp from which paper could be manufactured. The first wood pulp was produced in the United States in 1855; it was then that the modern pulp and paper industry really began.

Today, paper is one of the least expensive, most widely used and most useful things you can buy. The manufacture of pulp, paper and paperboard is one of the ten largest industries in the United States. Practically all paper is made in volume by the most advanced production methods, strikingly reflecting our nation’s aptitude for the manufacture, in quantity, of quality products. Almost 500 United States companies, employing 220,000 people, now produce over 35,000,000 tons of paper and paperboard each year.

From the earliest days of the industry, the largest single use for paper has been in the dissemination of news. Implicit in this fact is the importance of the newspaper to our national direction and independence. There had long been a grade of paper known as “news.” But not until the introduction of the groundwood pulping process in the 1860’s was there anything approximating the newsprint of today—a low-priced, high-volume paper made specifically for printing newspapers. With its introduction, the modern newsprint industry was born.

Since that time, the demand for newsprint has constantly increased. By the turn of the
prenent century production of newsprint was in excess of 500,000 tons annually. Its consumption in the United States today exceeds that of any other single grade of paper. Only depression and wartime controls have interrupted the steady rise in demand. Annual United States consumption of newsprint now totals more than 7,000,000 tons.

The introduction of newspaper supplements and magazine sections, published independently or on behalf of the advertiser, has materially increased the importance of the newspaper's role, adding new interest and excitement to the medium through the growing use of color printing. At the same time, the growth in America's reading public, advances in printing processes and the evolution of new advertising methods have led to a multiplication of magazines, "paper back" books, catalogs, directories, promotion pieces and business forms which cater either to interest in the printed word or to the convenience and effectiveness of written communication. These developments have led to a further tremendous growth in the market for groundwood printing papers.

Producing printing paper in volume for the mass communication field is the business of Great Northern Paper Company. Traditionally, the company has been, and it still is, the leading independent manufacturer of newsprint in the United States. During recent years Great Northern has added to its production a growing line of other groundwood printing papers as well, diversifying on a broad and rapidly widening front.
“The Northern”

On the map, the State of Maine projects upward like a giant green thumb at the extreme northeast corner of the United States. Nearly 90 per cent of its entire land area is wooded. In the four northern counties of Maine, bounded on three sides by Canada, lies an area especially rich in timber and water. Here Great Northern Paper Company, known locally as “The Northern”, operates two of the largest paper mills in North America.

Six decades ago when Great Northern Paper Company was founded, the first requisite for groundwood papermaking was water power to drive the mill machinery. The site of the company’s Millinocket mill was at that time an isolated farm in Indian Township No. 3, on the West Branch of the Penobscot River, deep in the Maine woods. At this point, a 110-foot drop in the river offered abundant water power. Spruce forest, over which loomed the familiar outline of Maine’s mighty Mt. Katahdin, extended in all directions, and promised vast supplies of wood.

The unusual possibilities of this site were recognized by Charles W. Mullen, a Bangor civil engineer, railroad contractor and lumberman. Others became interested in its development, and in 1897 they formed the enterprise known as the Northern Development Company. Two years later this organization evolved into Great Northern Paper Company, largely through the efforts of Garret Schenck, one of the country’s most successful paper mill builders and operators, aided by the financial backing of Colonel Oliver H. Payne of New York.

Construction of the mill was begun in 1899, in the midst of the Maine wilderness, by way of the newly built Bangor & Aroostook Railroad. Erection of buildings and installation of machinery on so grand a scale, in so remote a location, was a tremendous undertaking for those times, for this was to be the largest paper mill in the world. Design and construction of the eight-machine mill were carried out by Hardy S. Ferguson, who later became one of the foremost paper mill engineers in the country.

On November 1, 1900, Mr. Schenck, as President of the Great Northern Paper Company, started up the wood room machinery. Eight days later, the mill produced its first roll of paper.

While the new plant was under construction, there was also being created in the wilderness the new town of Millinocket, where the mill workers and their families would live. A description by Thoreau of the view from Mt. Katahdin gives us a glimpse of the Millinocket area:
Great Northern yesterday. These men and horses are working on the foundations of the East Millinocket mill. Constructed in 1906-1907, it represented the company’s first expansion after the Millinocket mill was completed in 1900.

“The Forest looked like a firm grass sward, and the effect of these lakes in its midst has been well compared . . . to that of a ‘mirror broken into a thousand fragments, and wildly scattered over the grass, reflecting the full blaze of the sun.’”

One does not have to share Thoreau’s imaginative insight to be fascinated by the idea of the streets for a town being hewn out of the remote woods. Before the mill was built, the only human habitation thereabouts was an isolated farm, where lived not more than four or five people. The original Town, its name appropriated from the language of the local Indians, was almost a pioneer settlement. Today Millinocket is a progressive community of 7,500 people, with every modern facility.

Stimulated by the ever-growing demand for the newsprint it produced, Great Northern expanded rapidly. In 1907 it built a new mill seven miles below Millinocket to utilize additional water power sites, and the equally modern and prosperous community of East Millinocket grew up around this second plant.

Thereafter, through both World Wars, a running program of improvement and gradual expansion was carried out. Paper machines were added at both mills and others were rebuilt and speeded up. Old equipment was replaced; steam plants were improved; permanent water storage dams were built, and the hydro-electric system was developed.

In 1952, Great Northern entered an entirely new phase of development. Based partly on the utilization of hardwoods, previously unused in the manufacture of newsprint and similar papers, the company embarked on a program which increased capacity nearly 50 per cent. A new hydro-electric station was
East Millinocket today. Ideally situated on the West Branch of the Penobscot River, the mill's capacity was tripled in the company's expansion program of the 1950's.

built at Ripogenus storage dam. A complete new mill to produce hardwood pulp was built. New steam-electric generating plants were erected at both mills, and two giant newsprint machines, among the largest in the world, were added to the East Millinocket mill.

With this new capacity for newsprint production a reality, the company began its program of diversification into other groundwood printing grades. Along with the expansion there also came new and better methods of production and quality control, new organization, new services to customers, and entry into new markets. These programs are now in full swing.

When it began operation, capacity at Great Northern's Millinocket mill was about 75,000 tons of paper a year. In 1907 the addition of the East Millinocket mill increased the company's total capacity by 35,000 tons a year. Today, Great Northern's capacity is more than 600,000 tons annually.
Trees: Paper’s Raw Material

Since that significant day when it was discovered, more than a century ago, that wood fibres could provide the raw material for paper, trees and timberlands have rightly been considered as assets of the greatest value, to be carefully treasured.

In the case of Great Northern, these assets are enormous. The company owns more than 2,000,000 acres of land in the great forests of northern Maine. It draws on the production of at least 5,000,000 additional acres. This total represents perhaps the greatest single block of timber reserves in the United States. It is an area larger in size than any one of the five New England states other than Maine. Stretched across the country from the Atlantic to the Pacific, it would make a ribbon of forest more than three miles wide. By rough estimate, this acreage contains 1,711,440,000 trees — enough newsprint “on the stump” to print 140 billion newspapers.

Notwithstanding this impressive reserve of raw material, Great Northern has always taken the long view of its wood requirements. It has recognized that only through good forest management can there always be enough fibre to meet the nation’s growing demand for paper — and it therefore has made full use of good forest management.

Great Northern Paper Company properly regards its land holdings as a trust for the future. Its program of forest management goes back to 1903. In that year, at the company’s request, the Federal Bureau of Forestry (predecessor of

*How much wood? A small part of what it takes to keep the mills supplied. The man is “sluicing”; i.e., guiding the four-foot sticks of pulpwood into the sluice that carries them to the mill.*
the United States Forest Service) surveyed Great Northern’s lands and made recommendations as to how they should be managed to protect the future. The original plan — the “Working Plan for Penobscot Timberlands, Great Northern Paper Company”, completed in 1904 — is still preserved, in its original leather binder. It was a good plan and its basic premise of a sustained yield has guided the operations of the Woodlands Department since its adoption nearly 60 years ago.

The aim of good forest management is to increase the growth of usable species of trees on forest land, and to maintain the yield. On Great Northern land the forest is annually growing as much wood as is being removed. Managed in this way, it represents a perpetual wood supply to meet the company’s requirements.

In 1909, in company with other landowners of the State, Great Northern sponsored the establishment of the Maine Forestry District, which is supported entirely by the timber owners and is responsible for the protection of the Maine forest against fire. In addition, the company maintains its own fire-fighting organization, with equipment located at strategic points throughout northern Maine. Similarly, its staff of foresters never relax their efforts to detect and control disease and insect infestation.

Great Northern lands have been completely air-mapped to provide up-to-date inventories of standing timber. Test plots, where growth is carefully measured, make it possible to predict how much wood can be cut in different areas each year and yet be replaced by new growth. There is no need to plant new trees in these areas. In Maine, properly cut timberlands reproduce naturally from seed in the ground or from seed trees left at the time of cutting.

The original 1903 forest management plan, though still useful as a guide, has been constantly revised and developed to meet changing conditions. The latest plan was completed in 1955, and makes a prediction of expected growth and allowable cut through 1985. In the last decade, a gradually expanding selective cutting program has been adopted, in which each tree to be removed is specifically selected and marked by a trained forester. Nothing is left to chance.
River drivers on Souldunahunk Stream. Usually an efficient and almost automatic means of transportation, the spring freshet occasionally requires manpower.

The development of selective cutting, strangely enough, has been made possible not only by enlightened forestry, but by modern operating methods that make the system economically feasible. Better roads, motorized equipment, the power driven chain saw, efficient planning—all combine to make the forest wilderness perennially productive.

It takes 1.1 cords of wood or, typically, eight 50-foot trees to make a ton of Great Northern paper. The company makes well over half a million tons of paper a year. But in the opinion of some of the nation's most respected timber experts, Great Northern's timberlands are now capable of producing more usable fibre than they were when acquired, and are a monument to farsighted forest management.

Most of the wood that moves by truck and rail is now loaded with mechanical equipment. It may travel 50 miles by truck or 100 miles by rail.
Water and Power: The Papermaker’s Tools

Without water, there would be no paper. In our northern latitudes water, ice and snow pervade the entire process of growing trees, harvesting and transporting wood, and converting it into pulp and paper.

To begin with, abundant precipitation, which averages 42 inches a year in northern Maine, makes ideal conditions for the growth of the trees that furnish the raw material for pulp and paper. The cutting and transportation of pulpwood is no longer strictly a winter operation, but winter conditions still provide certain advantages because of water.

During the winter season, frost hardens the ground, and snow and ice make good surfaces for roughly prepared hauling roads which can be built at a fraction of the cost of those for year-round service. Ice on lakes, ponds and

*Pemadumcook Lake: One of a number of lakes that act as reservoirs for Great Northern’s power system. The tug is towing a boom of about 4,000 cords of pulpwood — about two days’ supply for the company’s mills.*
Billions of gallons of water flow over Dolby Dam during spring freshet. Dolby is one of Great Northern’s six power dams along a 70-mile stretch of the Penobscot River.

streams makes large level areas on which wood from trucks and tractor trains can be unloaded, ready for floating to the mills with little if any additional handling. Again, while other means of transportation are being more and more widely used, the river drive remains the only practical method of bringing wood out of certain of Great Northern’s large cutting areas.

Water rushing through hydraulic wheels under a developed total head of 450 feet produces low-cost power to the extent of about 70 per cent of the company’s entire requirements. As steam, it cooks pulp, heats buildings, dries paper, and surges through turbo-generators to produce the rest of the power needed to drive the mill machinery.

In the mills there is “water, water everywhere.” It conveys wood from delivering vehicles or from storage to the barking equipment, washes it and moves it along to the grinders. Sprayed into the grinders, it cools the great grinding stones and carries the pulp to the screens and other processing machinery.

Around the plant, water has a thousand and one uses, from lubricating huge bearings to affording fire protection. And in the final paper making process, water carries the billions of tiny wood fibres evenly onto the “wire” of the machine, where they become the web of paper.

Only a very small fraction of the total volume of water employed in the paper making
process is retained in the paper or evaporated into the atmosphere. The bulk of it is simply borrowed, used, and returned again to the river. Nevertheless, it must always be available. To insure that this will be so, a series of Great Northern dams — with northern Maine names like Umbazookskus, Seboomook, Ripogenus, North Twin and Millinocket — hold nearly 60 billion cubic feet of water, enough to serve the household needs of 10 million people. This extensive storage system on the West Branch of the Penobscot also serves as effective flood control, and benefits all users of water on the river.

The manufacture of newsprint and groundwood papers requires the use of power in amounts difficult to comprehend. To the engineer, it may be enough to say that it takes nearly 2400 horsepower hours — one hundred horsepower used continuously for twenty-four hours — to make a ton of newsprint. In less technical terms, Great Northern uses enough power to supply the entire domestic and industrial needs of 500,000 people, and it generates all this power in its own system.

When the Millinocket mill was built, at the turn of the century, it was provided with the first electrical distribution system ever installed in a large paper mill, and a hydroelectric station was an integral part of the development. Over the years, additional water power sites were developed, at East Millinocket, Dolby, North Twin and Mattaceunk, all interconnected by a high voltage transmission system. Until 1952 Great Northern relied heavily upon water power.

But even the vast and carefully controlled resources of the West Branch are subject to fluctuation in the occasional years of drought. They could not be completely relied upon to sustain the nearly 50 per cent increase in production called for by the plan of expansion and diversification on which the company embarked in 1952. Therefore, when Great Northern completed the McKay hydro-electric station in 1953 — though it still had substantial

Silhouetted against the twilight sky are the Millinocket mill and the high voltage transmission tower carrying power from the hydro-electric system.
water power for future development — it turned to thermal power to augment its capacity. Two large steam-electric plants were built, at East Millinocket and Millinocket, in 1954 and 1956.

Steam from the new plants is used in three stages: at high pressure to produce electricity; at lower pressure to drive the paper machines; and as exhaust, to dry the paper — a highly efficient operation. The gleaming aluminum buildings, dominating the mill scene, contain boilers capable of generating 1,500,000 pounds of steam per hour at a pressure of 1,250 lbs. per square inch.

Most of the hydro-electric stations have since been converted to automatic control, and the entire electrical distribution system is now handled from one central station — dramatic evidence of the company’s progressive planning for the future. The combined water and steam power generating capacity of the system is ample to meet fully the needs of the far-reaching expansion and diversification program for years to come.
How Paper Is Made

Making paper consists basically of arranging water-suspended pulp fibres and filler material in such a way as to form a thin web, and then drying out the sheet thus produced.

Stated in this way, paper making may seem easy and uncomplicated. And indeed, up to the time of the invention of the paper machine, it was just such a simple art. Now, however, the manufacturing of paper has become a highly complex, carefully controlled process. The sheer bulk and cost of the equipment and material involved, and the magnitude of the sum of human effort required, reaches staggering proportions.

For one thing, paper making is a massive problem in logistics. Great Northern alone, in a single year, brings together 600,000 cords of wood, billions of gallons of water, 18,000 tons of sulphur, thousands of tons of clay, 50,000,000 gallons of fuel oil and several long trainloads of other supplies and equipment to carry on its operations. All of this requires precise planning,
careful timing, and mass movements of men and materials on well-organized schedules throughout the year.

Making paper calls for money, too. At Great Northern the raw materials are processed into paper in plants which originally cost the company more than $136,000,000 and manned by over 2,000 employees. Paper making plants represent one of the greatest investments per employee and per unit of production to be found in any industry. Each man in Great Northern mills is working with tools, equipment and plant, not counting timberlands, the depreciated cost of which is more than $38,000. Because of this high capital investment, the manufacture of paper is necessarily an around-the-clock operation.

The first step in the making of newsprint and other groundwood papers is the removal of bark from spruce and fir pulpwood, by tumbling it in huge steel drums. Part of the barked wood is then literally reduced to ground wood, in pulp grinders in which the barked logs are held against giant rotating grindstones five feet high and four feet across, driven by electric motors or water wheels.

A smaller portion of the wood is simultaneously being chipped into small pieces, after which it is boiled under pressure in a highly potent liquor made from sodium carbonate and sulphurous acid. This liquid dissolves the lignin, a sort of natural glue that holds the wood together, and thus separates the long, pliable fibres which constitute sulphite pulp.

Today, at Great Northern, a third type of pulp is made from hardwoods — birch, maple and poplar — called "hard" because the fibres in them are closely packed and tightly bonded. To soften these woods, four-foot lengths, or "bolts", are cooked in a chemical solution in huge vertical tanks. These are then ground in the conventional manner to produce what is known as chemi-groundwood pulp.

The various pulps, suspended in water, are separately passed through screens which remove coarse fibres, and are then thickened by removal of part of the water for better control of proportioning and mixing.

Depending upon the type or grade of paper to be made, the pulps may be colored or bleached, and filler or size may be added. They are then mixed in varying proportions, again depending upon the type of paper to be made, and are thinned with more water. This milky mixture, now 99.5 per cent water, is caused to flow smoothly onto an endless, rapidly moving
fine wire mesh called the "fourdrinier," at the "wet end" of the paper machine.

As the wire travels, water drains out or is removed by suction. The newly formed sheet of wet paper, at first barely able to support its own weight, is transferred from the wire to an endless belt of woolen felt. There it is squeezed free of more water between suction press rolls, passes into the dryers, a series of steam heated cylinders, and thence to the calenders, where a smooth finish is imparted to its surface. It winds up at the "dry end" of the machine in a big roll called a reel. It is then rewound, slit, and trimmed into rolls of various widths and diameters, which are weighed, wrapped, labelled, and loaded for shipment. All this occurs at a remarkable speed. Some of Great Northern’s machines are capable of making paper at nearly thirty miles an hour.

Formerly, the widest machine in Great Northern’s mills produced a sheet of paper 146 inches wide, at a speed of about 1,100 feet per minute. No. 6 machine at East Millinocket installed as part of the company’s expansion program begun in 1952, makes paper almost twice as wide, and more than twice as fast.

This expansion program at the East Millinocket mill took almost three years to complete and increased the company’s capacity to produce paper by almost fifty percent. Be-
Papermaking is largely a matter of mixing wood and water, then taking the water out. This vacuum thickener removes water to bring pulp to a uniform consistency. Samples are regularly tested in the laboratory.

Besides two modern paper machines and all the necessary auxiliary equipment, it included the hardwood pre-treatment plant, part of the Chemi-Groundwood mill and the first installation of its kind anywhere. An advanced example of automatic process control, this plant was an important factor in the expansion program, for the use of hardwood not only gives the papermaker a new pulp, but in effect it provides an even greater reserve of timberland. The hardwoods, abundant in northern Maine forests, were never before used by the company.

In Great Northern’s plant expansion and improvement program, full advantage has been taken of the most modern labor-saving materials and equipment. Stainless steel, aluminum and ceramics are seen almost everywhere in the mills, improving efficiency and reducing maintenance. Cranes and automatic conveyors lighten labor. Sulphur, formerly unloaded and stored by hand, is now received and handled in molten form. Cars of pulpwood are unloaded mechanically.

The costly business of piling and reclaiming...
The "wet end" of the paper machine under the critical eye of a skilled papermaker. The mixture of pulp and water, called the furnish, is 99.5% water when it flows onto the rapidly moving fourdrinier wire.

ing nearly 100,000 cords of wood at Millinocket to protect operations in winter has been eliminated by installing new barking drums, twelve feet high inside and half again as long as a box car. A seven-mile pipeline, with a glassy-smooth inside coating of epoxy resin, connects the two mills, carrying sulphite pulp from Millinocket to East Millinocket. It does away with a number of costly steps formerly required to ship the pulp by rail.

Along with improved equipment and processes have come new organization and better facilities for the control of production and quality. The demands made upon paper by today's high-speed printing methods are many and exacting, and into newsprint and groundwood papers, mass produced for mass consumption, must be incorporated the characteristics which make them perform well in the customer's pressroom.

Great Northern has always maintained rigid standards, but quality control has now been further intensified. A top-flight, well-trained organization of testing and inspection people at the mills, furnished with the best equipment available, makes sure that every step of the paper making process, from selection of the tree to the shipment of the completed roll of paper, is taken in accordance with these standards.
Groundwood Papers:
New Opportunities for Service

Great Northern Paper Company has historically been a producer of newsprint, but now the company also produces more than 145,000 tons a year of papers other than newsprint. These groundwood printing papers, or "specialties," are in increasing demand as new opportunities for their use arise in response to America's growing reading habit.

Newsprint remains the company's single most important product; but groundwood printing grades have substantially broadened the base of Great Northern's operation. This is to the benefit of the company, of the public which relies increasingly on volume grades of printing paper for economical communication, and of its customers, including newspaper publishers who frequently use Great Northern's specialties for supplements and special editions.

These specialties are not new, but within recent years the development of high-speed quality production methods has enormously increased their acceptance and application. Formerly not considered suitable for quality printing, they now, through continued research and resulting improvements, have found their way into almost every part of the mass communications field. Clean, bright and of uniform quality, custom-made for every printing process, modern groundwood printing papers offer the controlled bulk, opacity and "printability" required by today's presses, at minimum cost.

The shift at Great Northern to the production and marketing of these grades has been accomplished in a remarkably short time. It has been brought about through refinement of processes, by improvements in and additions to existing equipment, and by devoted effort and hard work.

Great Northern's decision to enter the groundwood specialty field was based on a studied analysis of the groundwood printing paper market and the availability of equipment at the mills. After the company's fast, new newsprint machines had been installed, its smaller and older machines could be released for more specialized production. Studies showed that they were ideally suited for making groundwood printing paper of the higher grades.

The first major step was into the field of "Publication Printing" — the production of a sheet designed for the printing of newspaper supplements and special sections by the rotogravure process. Then came, in quick succession, "Jet" — a clean white printing paper successfully used by letterpress, rotogravure and offset printers; bulky papers for paper back books; light weight directory paper, highly suitable for telephone directories; catalog papers for mail-order houses; school work-book paper; and papers specially designed for mass circulation magazines, "service" periodicals, such as brotherhood publications, and the like.

The newest development at Great Northern is the company's entry into the coated paper market — second in volume, after newsprint — among all the printing papers produced in the United States.

This again has been a logical extension of the company's line of inexpensive specialty groundwood papers designed for use in the field of mass communication. To make this coated paper, a base stock similar to Great Northern's groundwood printing grades is bonded to a light coating of extremely white kaolin clay. The result is a low-cost paper with a smooth, opaque finish, permitting accurate color reproduction and excellent printing fidelity on high speed presses.

In almost every kind of printed material you will now find Great Northern products in use: in newspapers and supplements; in books and magazines; in telephone directories and mail-order catalogs; in radio and television guides; in the store, the office, the school and the home — and there will be more, too, as Great Northern's diversification program progresses.
Getting The Product Into Use

The production of paper begins with the tree, but its final destination is the pressroom of the customer. Hundreds or thousands of miles separate the Great Northern mills from the customer’s plant, and that distance must be bridged by three separate but closely coordinated operations.

The first of these is the work of the sales organization. Although Great Northern is a major manufacturer of paper, it is by no means the only one, and the paper industry is one of the most competitive in the world. Every newspaper publisher and printer is besieged by the sales representatives of paper manufacturers. Great Northern must meet the pressures of this competition the same as any other producer.

Broadly, the sales activity of the company follows two general lines. Newspaper publishers, the principal consumers of newsprint, must be served by men who not only know printing and paper thoroughly but something of newspaper publishing and its problems as well.

Newspapers usually purchase their newsprint on long-term contracts, and many papers have two, three or more suppliers. The amount of paper actually taken from any one supplier depends on a number of factors. Constant attention to the publisher’s needs and plans is required of the paper salesman if his company is to get its share of the available business.

After the paper has left the paper machine it is trimmed, slit into rolls and carefully wrapped for shipment.
Great Northern serves some 250 newspapers in the area east of the Mississippi River.

The other principal field of Great Northern paper sales is groundwood printing papers, and this market in turn is made up of a great variety of different types of customers: book publishers, catalog publishers, advertisers, printers. Certain types of these specialty papers, such as Publication Printing, are also sold to newspaper publishers, for use in supplements and other special newspaper requirements.

Because of the very large variety of buyers and uses involved, this is an especially complex sales operation. Salesmen here, as in newsprint, are in intense competition with the representatives of other paper manufacturers. To succeed, a salesman must know a great deal not only about many different kinds of printing, publications, presses, processes and markets but also about the special qualities of his
Rolls in storage at a customer’s plant suggest the size of today’s demand for paper for use in mass communication.

Modern presses can deliver almost 1000 newspapers a minute.

own products and those of his competitors. Selling is of key importance, but it is only the first of the complicated procedures required to get paper from the mill into the hands of the user and safely through his presses. The second is the physical process of shipping it to the customer’s printing plant.

Most of Great Northern’s paper leaves the Millinocket and East Millinocket mills by rail, carefully wrapped and scientifically stowed in freight cars to reduce possible damage en route. Some paper leaves the mill by truck, and often it must travel by rail and then by truck. Great Northern has carried on extensive experimental work to develop better methods of wrapping, packing and handling paper and thus assure delivery to the customer of the best possible product.

Finally, the paper reaches the press of the customer, and here it might seem that the responsibility of the paper manufacturer is at an end. But not so. The paper must still be made to perform as the customer expects — and, since there are so many differences in printing presses and processes, getting the most out of a specific roll of paper may require a great deal of experi-
ence and technical knowledge. For the most part, this know-how is supplied, of course, by the customer's expert printing crew, but occasionally there are troubles.

For these occasions Great Northern maintains in its sales department an organization of service experts who understand the intricacies of printing and paper, and who are ready at short notice to go to the customer's plant and help him resolve any difficulty. The men of the service department also make periodic visits to customers' plants to make sure that Great Northern paper is performing satisfactorily, to help on special printing problems of many sorts, and to observe trends and new developments in printing.

Information about the performance of Great Northern paper obtained by service men and salesmen is continually fed back to the manufacturing organization, as a means of increasing the quality — the "printability" and "runability." This information guides the manufacturing department in its constant effort to please the one man whose opinions in the paper industry are more important than any other's — the customer. For on the customer's continued purchases and satisfaction all the rest of the operation depends.
People: Secret Ingredient of Good Paper

The success of a company depends primarily on the human beings of which it is composed. The impressive plants and equipment that Great Northern has brought into being in northern Maine would be just so much scrap without skilled and experienced men and women to bring them to life.

People from all over the United States and a few foreign countries make up the Great Northern organization. They come from all walks of life: paper makers and pulp workers, of course; men with long experience in management and finance; mechanics, engineers, woodsmen, salesmen, truck drivers, lawyers, doctors and cooks; people representing almost every kind of skill, profession, education, experience and training. In the communities of northern Maine, in New York, Boston, Cincinnati, Chicago or Washington, indeed, almost anywhere in the free world, you might run into someone who will tell you that he works for Great Northern, and is proud of it.
Part of the new Hillcrest housing development at Millinocket. More than 275 modern homes have been built in the area under a mutual assistance housing program sponsored by the company.

The largest single group of employees is that which operates and maintains the mills. The typical mill man was born and brought up in Millinocket or East Millinocket, or in one of the surrounding communities. More often than not, he is now in his second decade of employment with Great Northern and has all the knowledge, experience and skill that goes with long service. He is a union man, represented by one of the seven A.F.L. — C.I.O. organizations with which the company has maintained an unbroken contract relationship for more than half a century.

The average Great Northern mill employee earns more than industrial workers in any other community in Maine, and more than the national average for workers in industrial plants. He is covered by group life insurance and a comprehensive health plan which takes care of most of his medical and hospital expenses. He receives paid holidays and depending upon length of service, a paid vacation of up to four weeks. He shares in a funded retirement plan, paid for entirely by the company, in which he can acquire vested rights, and which, with Social Security, will provide him with a reasonable income when he retires at age 65, although he may, if he chooses, work until he is 68.

While the company's supervisory, technical and office staffs are of more diverse origin, a large proportion of these employees are also local men who have come up through the ranks, or who have returned from college or university to their home towns.

Great Northern communities are outstanding examples of the cooperation that can exist between a corporation and its employees. Extensive recreation programs for children and adults, fine schools, a community hospital,
Almost everything is within walking distance in the Millinocket. Almost needless to say, not many people walk any more.

Community athletic fields, swimming pools and picnic areas, typify this relationship. It is also expressed through the highly successful mutual assistance housing program, perhaps the only one of its kind in the country, under which more than 700 new homes have been built since 1947 by employees with the aid of the company.

The man “in the woods”, a highly important person in the Great Northern organization, also finds in the company’s operations a reward for his efforts that can be the envy of many of his city cousins. He knows his job well, and is well paid for it. On the job, deep in the wilderness, he lives in an up-to-date woodland camp, featuring electric lights, oil...
heat, shower baths and all the food he can eat. Radios and television are almost everywhere, and good roads enable him to visit his home often. In recent years, mechanical equipment, powered by the ubiquitous internal combustion engine has lightened the physical effort of woods work. Working hours have been reduced and substantial progress has been made toward the spreading of woods activities around the calendar to reduce seasonal unemployment. A merit bonus system, paid holidays, and a pension and insurance plan give the woods worker a new interest in the company which employs him.

Other areas of employee relations at Great Northern are also of interest. Credit unions, sponsored by the company, do a million dollar business. Accident prevention programs have done outstanding service in reducing loss and suffering, particularly in the woods, where Great Northern woodsmen regularly turn in one of the best safety records in the country for this type of work. The personnel department, organized in 1954, is staffed by people who grew up with and understand the problems of the company's employees.

To the extent that the realities of a highly competitive business permit, the company, consistently and with purpose, gives those who work for it better than average income, recognition, consideration and security. In return, it receives better than average loyalty and cooperation from the entire organization.

*Ambajejus is one of the beautiful lakes within a few minutes' drive of Millinocket. Many of the company's employees have camps on this and other nearby lakes.*
Work and Play: The Concept of Multiple Use

For more than a hundred years, Maine’s lands have been the mainstay of its economy. Harvesting the products of the land, and especially those of the forest areas, is essential to the welfare of its people. The wood harvests produce the income that sustains a large part of the State’s economic life.

At the same time, the forests, rivers, lakes and mountains provide unsurpassed recreational opportunities to many thousands of people who enjoy the outdoors. Not only residents of the State, but people from all over the country visit northern Maine as fishermen, hunters, hikers and mountain climbers, or for camping, boating, canoeing or just plain getting away from it all. Recreation is a mighty important function of the forest lands of Maine.

One of the opportunities of the State, therefore, and of all of the major landholders within it, is to bring together these two great purposes of the land: to serve the need for products, jobs, income and industry on the one hand; and the recreational needs of the people on the other. Out of the thought and planning of many people there has come this broad concept: manage the land in such a way as to provide for more than a single use. This concept of “multiple use” is now dominant in Maine timberland development, and it is highly successful.

“Multiple use” as a term applied to timberlands was unknown forty years ago, but the principle nevertheless was then in practice on Great Northern lands, when a letter containing the following statement was written by a private citizen of Maine to the Isaak Walton League:

“We who are familiar with the territory of the Great Northern Paper Company appreciate what had been done for the development of our hunting and fishing region; the Company has built and main-

White water. This is Allagash Falls, goal of hundreds of dedicated fishermen. The Allagash area has been a prime source of timber for generations.
tains about 200 miles of splendid automobile highway, over which thousands of automobiles go each year through the hunting and fishing seasons, making easy of access places that were almost inaccessible, and nowhere on any territory owned by the Company have I seen a ‘No Camping’ sign.”

From the beginning, Great Northern’s purpose in owning timberland has been to grow the wood needed for its operations, and to manage it so it will always produce wood in the requisite quantities. Since before the turn of the century, it has acquired its broad land holdings by purchase. These timberlands, the mills and other properties now represent the largest investment by an industrial corporation in the State of Maine. The harvesting of the products of the forest areas is necessary to its existence, to the prosperity of its employees and their families, and to the interests of the citizens of Maine, every one of whom is affected, directly or indirectly, by the company’s activities.

Despite the great economic importance

Two senior citizens tie flies, to try out their own theories as to the best way to lure fish.

This public camp site at Seboomook Landing on Moosehead Lake was opened by Great Northern for everyone’s enjoyment.
of the timber, people have always been free to come and go on Great Northern’s lands as they pleased, as long as they have complied with State laws regarding camping, fires, fish and game. The company’s system of private roads now reaches a total length of more than 500 miles and most of it has always been open to the public.

Improvement of public highways and the increase in tourist travel in recent years, together with the modern accent on the value of recreation to the well-being of the individual, has added new importance to facilities for access to the woods of northern Maine and the enjoyment of their beauties.

In keeping with this trend, Great Northern has accelerated its program of making lakeside lots available, and more than 2000 families own camps or cottages on land leased within the company’s forest area. In addition, some 90 campsites and picnic areas have been established on company timberlands and are maintained by the Maine Forest Service and Highway Department. Two exceptionally beautiful campgrounds, at Seboomook and Sourdnochunk, have been developed by the company for public use.

Timberlands are vital to Great Northern because wood is the life blood of its business, but to the extent it is feasible to do so, the company is glad to share the enjoyment of its lands with its friends and neighbors.
Planning The Future

No well-managed industrial enterprise ever stands still. It must continually adjust to its necessities and the opportunities presented by the world around it. Ten years hence, the basic principles that have governed Great Northern in the successful conduct of its affairs will not have changed, but the company itself will undoubtedly have done so. Such changes and improvements will not come about by chance. In the main, they will be the result of alertness, foresight and planning.

Ultimately, planning is the responsibility of the company’s officers. It is their function to consider all new ideas; to have thorough studies made of those with promise; and to recommend to the Board of Directors action on those that will further the company’s development and progress.

Each major department also carries on formal and informal planning activities. It is partly as a result of these that so much progress has been made in recent years in every area of the company’s operations.

Supplementing these management and departmental responsibilities, one of the most powerful forces for future change and growth is the company’s Engineering and Research Department. To this organization falls the duty of promoting new technical thinking on company products and processes, bringing together new ideas from various sources, adding to them the scientific or engineering knowledge needed to make them effective, and helping to fit them into the company’s long-range growth and development plan.

“Big Inch” in northern Maine. Great Northern’s 7-mile pipeline carries sulphite pulp to the East Millinocket mill. This is the 580-foot crossing over the West Branch of the Penobscot River.
Engineering and research have recently received fresh impetus in Great Northern. The company since its earliest days has maintained an Engineering Department, which, in addition to the routine handling of every-day engineering problems, has many special accomplishments to its credit. These include the design and construction of the company’s dams, hydro-electric plants and the power distribution system, and such firsts as the compressed air devices that made high-speed paper machine operations possible, and the Great Northern grinder, now in use almost everywhere groundwood pulp is made.

In recent years, enlarged and strengthened by the addition of men educated and experienced in every branch of engineering, it has been responsible for the design and construction of the buildings and plant involved in the expansion and diversification program; the automation of power stations; the new wood room and wood handling complex at Millinocket; and the pipeline which now connects the two mills.

The company has also had for many years a technical organization, concerned with the more scientific aspects of pulp and paper making. Here, in what is now the Research and Development Department, the progress in the last few years has been striking. From a nucleus of a few, there has been developed a carefully staffed, highly skilled group, organized to make the research investigations, studies and experiments that will lead to the technical advances of future years.

Both of these technical organizations, combined in a single Engineering and Research Department, are now housed in a modern new building, designed to meet their particular needs and containing the most modern laboratories and pilot plant equipment. The importance the company places upon engineering and research indicates its awareness of the necessity, not only of keeping up with technical advances, but also of pioneer research, the results of which will be apparent only in the future. From this Department will come both the new ideas and many of the young technical men who will translate them into action.

Planning for the future at Great Northern is not a cut-and-dried process. It is a flexible program, directed toward a definite goal, but capable of shifting with the times. Someone has said that individual “success is a combination of chance and a prepared mind.” Great Northern’s preparation, in the way of looking ahead and being ready for what is to come, seeks to leave as little to chance as possible.