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InTouch

By and for Employees of Temple-Inland Forest Products Corporation



Environmental Research Studies

DOING THE RIGHT THING

FALL '93

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CONTENTS



MyTurn 1
Temple-Inland Inc. Chairman of the Board and Chief Executive Officer Clifford Grum comments on the state of the company during difficult times and outlines the company's mission for the challenges that lie ahead.

Doing the Right Thing 2
Using its past environmental achievements as building blocks, Temple-Inland is aggresively pursuing research efforts designed to enhance the company's role as an environmental leader in the forest products industry. Research projects and other key studies are reviewed in this look at our environmental programs.

This 'n That 6
Temple-Inland Diary *features Inland-Rome Lumber Operation.* ***Beetle Mania*** caused by the bad news bug of the South. ***Customer Profile*** *Hampton Homes.* ***Arc Sawing System*** *at Buna Lumber Operation.* ***Genetic Breakthroughs*** *may help reforestation.*



Perspectives 10
Capitol View reviews Texas' Proposition , a constitutional amendment on the state's November 2 ballot, which authorizes a tax exemption for pollution control property.

Insiders 13
Pete Smart honored by Lumberman's Association of Texas. Temple-Inland Food Service Corporation installs news press at Carlisle. Project Learning Tree workshop trains youth leaders in Southeast Texas. Bleached Paperboard Group opens Silsbee office.



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Cover Photo
The saw palmetto or Ferenoa retens grows in poorly drained, wet-natured soils of the Southeastern U.S., from East Texas to Florida.
photo by Jay Brittain

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MY TURN



JAY BRITTAIN

Clifford Grum
Chairman of the Board
& Chief Executive Officer
Temple-Inland Inc.

Temple-Inland has completed a very difficult quarter with earnings of $.38 per share, less than half of our earnings in the second quarter of last year. Both our building materials and financial services groups had outstanding results, but the worldwide recession has reduced the demand for most of our paper products. Price erosion and increased costs for most paper products have reduced profit margins and, in some products, the current selling prices are below our cost.

The U.S. is continuing with its slow recovery, but most of the other global economies continue to decline. It may be some time before the world begins to recover.

The cost improvement programs that we have completed and our mix of businesses have allowed us to report better earnings than many of our competitors. However, our combined results continue below reasonable expectations. Some may consider this adversity a major problem. I would rather think of it as merely another challenge to overcome.

Temple-Inland has a mission of being a low-cost producer allowing superior profitability from our diversified operations. Unfortunately, being low cost requires continuous improvement or the competition will overcome our lead.

In light of the challenge that lies before us, we must add two additional operating standards to our mission — superior quality and waste reduction. Quality is defined by our customers. Quite frankly, companies who haven't achieved high quality standards are either out of business or on the brink of closing. Experts tell us that the customers of the 1990s want perfection. "Quality is doing the job right every time. Perfection is doing the right job right every time," according to H. James Harrison, the International Quality Advisor for the firm of Ernst & Young.

To achieve the highest standards of quality we must work to improve elements that add value to the customer. Value-added work enables the employee to perform those tasks which are considered most valuable to our customers. In both the Building Products and Bleached Paperboard Groups, we have established quality assurance and process improvement programs. However, we have fewer opportunities available in process improvements because of the technological improvements undertaken in the 1980s. Therefore, there are few home runs left in this area.

Business processes have not undergone the same scrutiny as manufacturing processes. We can make inroads to improvement by understanding a corollary to the quality process — the elimination of all waste in manufacturing and administrative processes. By re-engineering the business process, the fundamentals of our business, we will become more efficient in providing the best price for the products and services our customers demand.

I am reminded of a business proverb — that the highest price gets no business and the lowest price gets all the business. Today, we know the low cost with highest quality gets the business. In other words, our goals will be realized when we achieve the cost with the most efficient process with quality levels (including both the product and service connected with the sale) that are superior. This expands the business proverb to reflect today's climate — that when all things are considered equal, the successful company will win all ties.

It is my hope that each of you will become more innovative in finding a more efficient method of accomplishing your job. Offer suggestions. You should not wait for someone else to reach your conclusion. Those of you working in the administrative arena of our business must become waste conscious as well. Reduced cost here is equally as important as similar reductions in the manufacturing processes.

Record building material earnings are certainly to be congratulated, but until we have eliminated all the waste from the system, we will not maximize the earnings potential of the group.

Our challenge in these hard economic times is to continue to invest in our future, building a superior company with a larger employment base and increased profitability. The true test of our mettle will be the unified effort and commitment of the entire group of employees. Together, we will capitalize on the opportunity of becoming more efficient, more quality conscious and less wasteful of our time, capital and talents. I am convinced Temple-Inland's workforce is as hard-working and dedicated as any in the business.

We can win all ties.■

-- Clifford Grum

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Temple-Inland's forestry research area at Forest Lake.

DOING THE

Environmental research studies help Temple-Inland go beyond what is required by law.

Using its past environmental achievements as building blocks, Temple-Inland is aggressively pursuing research efforts designed to enhance the company's role as an environmental leader in the forest products industry.

"While we're producing products for millions of Americans, we want to make sure that our manufacturing facilities and

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photo by Jay Brittain

RIGHT THING

timberlands remain good neighbors to the communities they serve," said Temple-Inland Inc. Chairman of the Board and Chief Executive Officer Clifford Grum in a recent speech.

Whether it's an ongoing process or specific study, research is essential to the success of Temple-Inland's environmental efforts. It enables environmental scientists, company planners, manufacturing managers, and foresters to make decisions which serve the company and the environment in the best possible manner.

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Temple-Inland's research efforts have in recent years embraced every company operation. We've taken each area of study and reported here the latest research efforts being coordinated by the Environmental Affairs Department of Temple-Inland Forest Products Corporation under the direction of Vice President Mike Harbordt, and the wildlife and forestry studies, headed by Land Services Manager Dr. Darwin Foster. Studies include wetlands; air and energy; wastewater; product safety and stewardship; process safety management of hazardous chemicals; solid and hazardous waste; wildlife and forest management; and, endangered species. The company also participates in a number of research projects nationwide through industry membership in the National Council for Air and Stream Improvement and the American Forest and Paper Association.



JAY BRITAIN

Temple-Inland employees participating with universities and other agencies and groups are Norman Davis, Hardwood Management forester; Linda Syler, director of Solid/Hazardous Waste and Forest Environmental Programs; Bill Goodrum, environmental biologist.

WETLANDS

It takes more than just water to classify an area as a wetland. But what causes some areas to be called wetlands and others not sometimes seems puzzling, particularly when considering that wetlands exist in places such as West Texas and Arizona.

Wetlands, by definition, are "those areas that are inundated or saturated by ground or surface water at a frequency and duration sufficient to support, and that under normal circumstances do support a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."

These unique habitats provide the link between land and water and the basic links among the food chains.

With wetlands preservation becoming more important and considering the national goal of "no overall net loss" of remaining wetlands, Temple-Inland has launched the largest wetlands research project in its history. "We recognize the importance of wetlands and the critical part they play in the total ecosystem," said Linda Syler, director of Solid/Hazardous

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Waste and Forest Environmental Programs at Temple-Inland. "This study will determine the impact, if any, our timber harvesting has on these unique systems."

The far-ranging project combines the expertise of Temple-Inland foresters and Environmental Affairs personnel, supported by some of the country's leading research experts.



JAY BRITAIN

This herp array, or snake trap, is used for studying the effects of harvesting on reptiles and amphibians.

The study, which encompasses three replicate 90-acre locations on Temple-Inland lands in Southeast Texas, has three purposes:

1. To further research through sound, technical data to investigate whether silviculture (forestry) activities are compatible with bottomland hardwood and/or wetland areas,
2. To monitor water quality associated with wetlands systems, and
3. To monitor other, associated impacts.

While Temple-Inland is co-funding and participating in the exhaustive study, key research groups include Texas A & M University, Mississippi State University, the National Council for Air and Stream Improvement, the U.S. Forest Service, and the Environmental Protection Agency.

The three-year bottomland hardwoods/wetlands study is composed of several categories which include:

- vegetative response to various harvest intensities and techniques as it relates to canopy closure, soil texture, depth to mottling, and regeneration,
- effects of harvest intensities on amphibian, reptilian, and small mammal populations,
- effects of harvest intensities on sediment export to surface waters, subsurface water quality, distribution of nutrients such as nitrates and phosphates to depth, and nitrogen mineralization,
- carbon dioxide eflux.

AIR AND ENERGY

"With the government's dramatic shift in recent years from emphasizing the control of emissions of conventional pollutants to those with a greater risk of effecting human health, there became a necessity to identify the specific compounds that comprise the air emissions from our manufacturing facilities," said John Orynawka, director, Energy and Air Programs.

Through a cooperative air sampling program with other Texas pulp and paper mills and independent sampling of several Temple-Inland solid wood manufacturing facilities, an inventory of emitted compounds is being developed. The testing conducted, though common in the chemical/petro chemical industry, is uncommon in the forest products industry, making the data gathered significant to Temple-Inland's present and future air emissions program to minimize the effect of emissions on the environment.

"We're now able to respond to emission inquiries with confidence," said Orynawka.

A common thread throughout the forest products industry is the intensive use of energy to manufacture various products.

"A significant advantage in our industry is the ability to offset the cost of this high energy demand with self-generated biomass fuels (bark, sawdust, sanderdust, etc.)," said Orynawka.

"At some of our facilities over fifty percent of our energy comes from biomass fuels."

A part of the Temple-Inland energy management program is to find and implement new and better ways to more efficiently utilize these fuels and develop other efficiencies.



Litter collection in this leaf trap tells researchers about overstory conditions and defines the character of the forest.



JAY BRITAIN



JAY BRITAIN

Two universities participating with Temple-Inland in the wetlands study are Texas A&M University and Mississippi State University.



JAY BRITAIN

John Orynawka is director of Energy & Air Programs.

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A developing project is to use a proprietary gas reformer technology which will convert particleboard sanderdust into a medium BTU gas that can be fired like natural gas in a boiler, turbine or heater. The successful operation of this system would increase fuel efficiency, allow utilization of excess sanderdust currently being landfilled, and eliminate the need for additional air pollution control on an existing sanderdust boiler.

"The available gas will be a much cleaner fuel than the dust presently being burned," said Orynawka. "There will be a three-fold environmental benefit through this new technology."

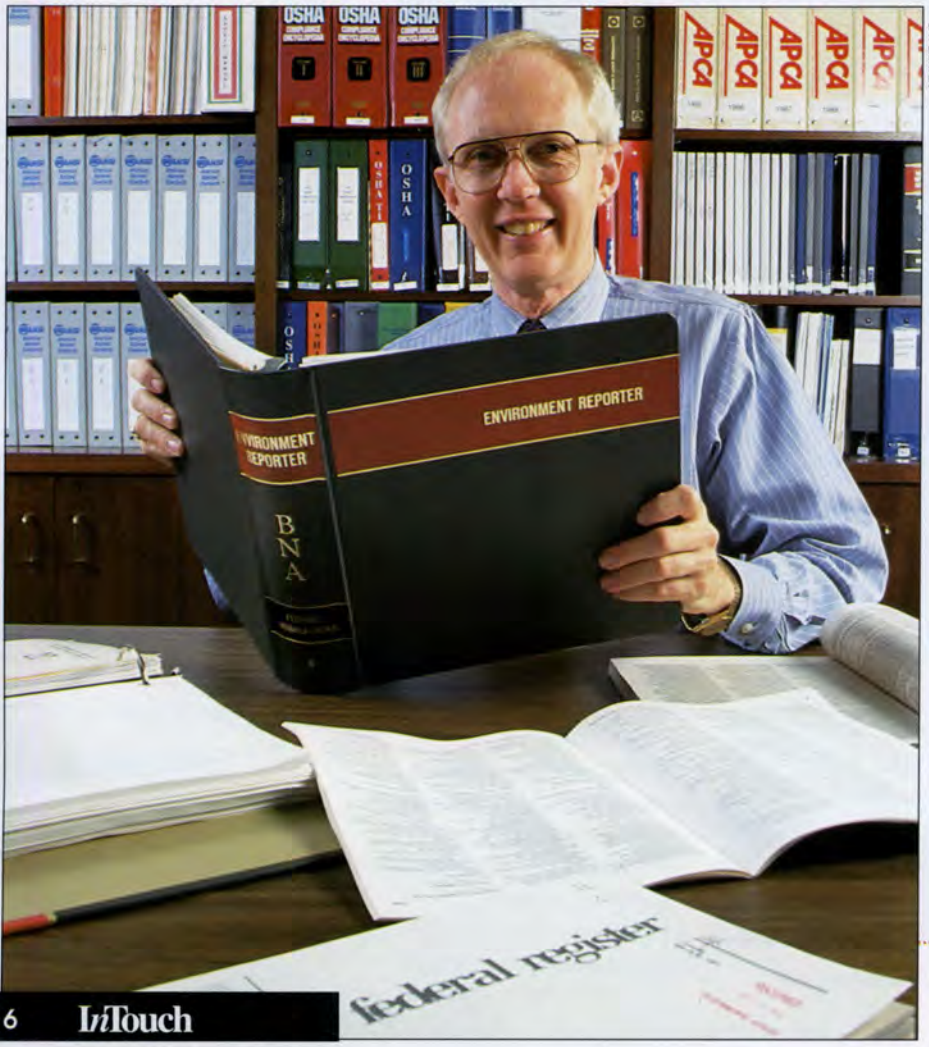
Attempts to use bark and other biomass in the reformer are a goal of this experimental undertaking.

Various methods of air emission control can be extremely energy intensive as well. High pressure drop scrubbers and incinerators can be cost prohibitive to operate. As a means of reducing hydrocarbon emissions at the particleboard facility, Temple-Inland will pilot a wet electrostatic precipitator that is believed to significantly reduce emissions with the lowest possible energy consumption.

Said Orynawka, "This technology is uncommon in the particleboard industry, and we hope it will meet our expectations as an efficient means of assuring our environmental goals."

Squeezing all the work out of each BTU used is an additional goal of the Temple-Inland Energy Program. A common method in doing this is the use of cogeneration or the simultaneous generation of steam or hot gas and electricity, using the same BTU's.

"At the Bleached Paperboard Operation, we presently generate sixty percent of our electrical needs," explained Orynawka. "Studies are underway to expand cogeneration at this facility and to introduce cogeneration at our Pineland, Diboll, Monroeville, and West Memphis Operations. Since the majority of electric utilities do not use cogeneration, we can convert our energy more efficiently and cost effectively, therefore generating power cheaper than we can purchase it. We plan to combine gas reformer technology with cogeneration as the opportunities develop."



JAY BRITAIN

ENVIRONMENT

Temple-Inland has a history of self-auditing programs of varying scope because of its management's concern for the health and safety of its employees, its products and the company's contribution to environmental impacts. In 1993, however, the Temple-Inland Board of Directors more formally defined its expectations for self-auditing of environmental, industrial hygiene and safety practices, and this is manifested in the Environmental Principles statement. The Environmental Affairs Department manages the industrial hygiene and pollution control audits. In the area of safety, the department has oversight responsibility for self-auditing programs which were set in place by each of the operating groups.

Most Temple-Inland employees are familiar with the industrial hygiene surveys and audits which the company began in 1987. These included reviews of the implementation of various industrial hygiene regulations such as the hazard communication regulation of the Occupational Safety and Health Act. Pollution control/environmental management auditing has moved to a more formal procedure this year. Prior to 1993, this oversight was from an ongoing knowledge base and not formal reviews.

For the past eighteen months, the Environmental Affairs Department has been developing this audit procedure which specifies the conduct of the intra-company pollution control and industrial hygiene audits. These audits are managed by the department and include team members from the site being audited as well as other operational facilities.

According to Environmental Affairs Vice President Mike Harbordt, these audits are relatively complex. A protocol or description of the steps of the audit guides the overall process. The site is notified of the audit, the audit team named, the audit conducted and the results reviewed with the operations management. Corrective action plans are then developed by the site for any remediation or improvement requirements.

Mike Harbordt is vice president, Environmental Affairs.

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AL AUDITING

"The new pollution control audits should not be a policing action, but a training tool, a chance for this department and the operations to better organize what we are basically already doing," said Harbordt.

"Each facility has the opportunity to review the audit and revise or correct any errors of misunderstanding which may have been recorded during the audit," said Harbordt. "The audit team is expected to confer with the facility or operations management in an exit conference to finalize the findings and remediation measures as understood at the time."

Harbordt said his staff is available and anxious to help the facilities to develop any corrective action plans. They and Temple-Inland management monitor progress for corrective actions based upon a mutually agreed schedule.

The company's Pineland Operation was the first facility to undertake a pollution control audit utilizing the company's own staff. The first couple of audits were to be learning experiences for the department and some procedural improvements were developed for the second audit, Fiber Products Operation, Diboll. The third audit, scheduled for Fletcher Wallboard Operation, will benefit from improved methodology derived from the Fiber Products audit. Harbordt stressed that each of the facilities audited have been very cooperative and sincerely desirous of any information which could better help them meet their responsibilities for maintaining compliance with environment, health and safety rules and regulations as well as company policies.

In addition, some operations have designated a lead person for coordinating their pollution control responsibilities. Kate Oschwald-Arnold was recently named to guide these efforts at the Fiber Products Operation. Tommy McAdams at the Bleached Paperboard mill in Evadale was recently named environmental manager. Chad Nerren at Pineland has environmental responsibilities, and Temple-Inland Food Service's Jim Bathe assists with work at the five Food Services' plants, though he is based in Ohio and is responsible for engineering as well.



JAY BRITAIN

Buzz Patrick, director of Water & Wastewater Programs and Treasia Leatherbury, environmental chemist, monitor wastewater from the Diboll Lumber Mill.

WASTE AND WASTE WATER

The Water & Wastewater Programs Group, headed by Buzz Patrick, director of Water and Wastewater Programs, is responsible for permitting, wastewater compliance assistance, review of facility and/or treatment system modifications which impact wastewater, land purchase environmental review, hazardous waste remediation projects, and environmental impacts.

Meeting these responsibilities often involves field sampling and analysis of wastewaters, developing design concepts to improve a wastewater treatment system, working with facility personnel developing a new process, providing training for plant sampling personnel, interacting with federal and state agencies, and compiling monitoring data to meet agency reporting requirements.

A major research effort of the company concerns dioxin. Concern for dioxins in the environment began to increase in the company in the late 1980s. One source identified was the pulp and paper industry as a result of chlorine bleaching. Temple-Inland's Bleached Paperboard mill utilized elemental chlorine bleaching in the past.

As research improved the understanding of dioxin formation, Temple-Inland developed alternative bleaching methods and identified the mechanisms which caused the formation of extremely small amounts of dioxin in the product and wastewater. An action plan was formulated to modify processes to reduce dioxin to

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nondetectable levels in Temple-Inland's wastewaters.

The pulp and paper industry, including the Evadale mill, voluntarily committed to the Food and Drug Administration (FDA) to reduce dioxin levels in paper products to no greater than 2 parts per trillion by December 1992. Additionally, new federal and state wastewater permits required specific limits on the amount of dioxin that could be present in our wastewater discharge. These reduced limits became effective in the summer of 1993.

A management team was organized including environmental specialists, plant engineers, process experts, and senior management oversight to review and develop a plan to achieve or exceed the dioxin reduction goals. Innovative changes were developed and incorporated into the design of the new Number 4 fiberline and retrofitted to the existing bleach plants which eliminated the use of elemental chlorine.

An extensive testing program of product and wastewater began to show decreasing dioxin levels as the modifications were incorporated in the existing facility. The Evadale mill achieved average values of dioxin detected in the products, well below the targeted 2 parts per trillion by the end of 1992. Average dioxin levels in the mill wastewater were substantially below the agency allowed levels some 18 months prior to permit requirements.

"This success was the result of many people of varied backgrounds, such as Evadale's Engineering and Technical Departments, and company commitment to provide extensive financial resources to meet and/or exceed the goals of dioxin reduction," said Patrick.

Water and wastewater activities could not be accomplished without the efforts and coordination of the plant environmental contacts, and the Evadale laboratory personnel. Said Patrick,b "Hundreds of wastewater samples are processed monthly to produce the myriad of reports submitted to the agencies documenting the company's compliance with all permits."

Temple-Inland's commitment to sound forest management is further exemplified in efforts toward implementation of forestry best management practices (BMP's). Two years ago the company helped lead the way in developing a BMP manual, the first in Texas. Recently the manual was revised. BMP's, which are currently voluntary in Texas as well as a number of other states, are practical and environmentally sound ways to manage forest lands.

The company has implemented a formal BMP audit program to monitor the implementation and effectiveness of the BMP program managed by Frank Shockley, division forester. A team effort among Forest Division and Environmental Affairs personnel, the program evaluates techniques used in logging, road construction, site preparation, and buffer zones in relation to protection of water quality. The concept is another example of Temple-Inland's efforts toward good stewardship of natural resources.

"Hundreds of wastewater samples are processed monthly to produce the myriad of reports submitted to the agencies documenting the company's compliance with all permits."



JAY BRITAIN

Don Cox is manager of Chemical Control and Health Programs.

PRODUCT SAFETY AND STEWARDSHIP

The company has been active in the area of product stewardship with its efforts in reducing emissions of formaldehyde from its particleboard products. There has been some association between vapors of formaldehyde and the potential for irritant effects. In response to this concern, the company has instituted a number of activities and in many cases has been at the forefront of industry in developing techniques in reducing these levels, according to Don Cox, manager, Chemical Control and Health Programs.

Approximately five years before the conception and then enactment of the Department of Housing and Urban Development (HUD) Standard for emissions of formaldehyde from products that are used in the construction of manufactured housing, Temple-Inland began testing its products from all three particleboard operations and used a proposed voluntary guideline to confirm its board is safe for the intended use.

"As technology proceeded and understanding of the phenomenon of formaldehyde release as well as implementing the HUD Standards developed," said Cox, "Temple-Inland voluntar-

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ily certified all products to comply with HUD Emission Standards which would include all products the company manufactures rather than just those which would go into the construction of manufactured homes (the purpose of the HUD Standard)."

The company purchased, installed and began to operate a large scale test chamber, which is the required test method used in the HUD Standard to certify particleboard.

"This test chamber simulates the living environment as it has an air exchange rate and usually represents the worst case for most mobile home conditions of particleboard product use," explained Cox.

Particleboard management is committed to manufacture and market the lowest average emission particleboard possible using techniques and technology utilizing urea-formaldehyde resin.

"The company's emission averages lead the industry and as such the company should be justly proud of the effort," said Cox.

PROCESS SAFETY MANAGEMENT OF HIGHLY HAZARDOUS CHEMICALS

Prompted by growing public concern over a rash of catastrophic chemical releases in the mid-1980's and subsequent chemical plant explosions in the later part of the decade, OSHA issued its regulation on Process Safety Management of Highly Hazardous Chemicals in early 1992. The regulation covers all processes involving chemicals listed in the regulation exceeding specified threshold amounts and, in certain circumstances, flammable liquids or gases above 10,000 lbs. Among regulated chemicals are a number used or generated in the pulp and paper industry, including chlorine, chlorine dioxide, hydrogen peroxide, hydrogen sulfide, and others.

"Prior to OSHA's regulation, however, the Bleached Paperboard mill at Evadale had already begun to identify and develop the procedures, engineering practices, and other management systems necessary to assure that its hazardous process chemicals remain in closed systems," according to Jack Matthews, director of Safety and Health Programs at Temple-Inland. "Using an engineering consulting firm with recognized expertise in process safety management, the first step was to evaluate existing process safety systems, identify areas needing improvement, and develop a priority schedule for implementing those improvements," said Matthews.



JAY BRITTAIN

Jack Matthews is director of Safety and Health Programs.

Leading the Process Safety Team at the Evadale mill are Wayne Pullen, Manager of Plant Protection; Ray Loupe, Safety Manager; and Gary Davis, Senior Engineer and PSM Coordinator. Current efforts of the PSM Team include: development of inspection and testing procedures for critical process equipment; updating operating procedures, emergency response procedures, and process hazard analysis procedures. Also important is assuring that both Temple-Inland employees and employees of contractors working in the process areas have been adequately trained in the proper operation and maintenance of the covered process equipment.

Among the more notable accomplishments to date are the pre-startup safety review conducted prior to bringing the new Number 4 Fiberline into production and a new procedure for the selection and certification of contractors based upon their safety history and performance.

"The hazard analysis techniques learned during the review of the Number 4 Fiberline will be carried forward into all the Evadale modernization effort," according to Loupe. "Also," said Loupe, "the contractor selection and certification criteria is now being applied mill-wide, not just in the process areas covered by the OSHA regulation. Although compliance with OSHA's PSM rule is certainly very important, our primary goal is to assure the safety and health of our employees, our contractors, and the community. Our efforts in the area of process safety management will help us to achieve those goals."

SOLID AND HAZARDOUS WASTE

With federal regulations increasing and becoming more stringent every year, the solid/hazardous waste programs at Temple-Inland are constantly changing as the company seeks new and improved ways of dealing with solid wastes and materials potentially hazardous to the environment.



As one of his duties as industrial hygienist, Mike Bintliff measures noise levels at Building Products Groups' laminating plant.

"The company's emission averages lead the industry and as such the company should be justly proud of the effort"

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Existing programs stress waste minimization and reduction, pollution prevention, and recycling opportunities. The company currently recycles scrap metals, waste oil and oil filters, scrap or used batteries, solvents, waste paint related materials, and empty drums and containers. Programs are being developed to further recycle wood wastes, paper, wood ash, plastics, and paper mill sludge.

To minimize hazardous waste generation, the company utilizes product substitution where possible, changing from chemicals considered hazardous to others which are nonhazardous. An example of this effort is demonstrated in use of solvents for maintenance and parts washing. "Many of our facilities have already converted from hazardous solvents to nonhazardous substitutes," Syler said. "We are embarking upon a company-wide program to eliminate as much hazardous waste generation as possible."

The company continues to explore new opportunities for waste management in other areas. One such area being considered for experimental trials for handling waste water from some of the remotely located company solid waste sites is constructed wetlands. Properly designed and managed, these systems provide excellent treatment for various effluents through filtration, settling, and nutrient uptake.

"Although we own land primarily to supply wood fiber to our mills, we understand that each forest management decision we make has a potential impact upon several plant and animal species."

WILDLIFE MANAGEMENT

With more than 15 studies underway, Dr. Darwin Foster, Land Services manager who is in charge of forestry research for Temple-Inland, feels the remaining years in the decade will present some of the most challenging times for company forest managers.

"We must be good stewards of the land. Although we own land primarily to supply wood fiber to our mills, we understand that each forest management decision we make has a potential impact upon several plant and animal species. In order to be able to anticipate these impacts, we are conducting a wide variety of research projects. Since we do not have a research staff, we work in cooperation with several of the country's leading universities. That way, we can tap the best and most knowledgeable resources while providing them with the opportunity to work on 'real world' projects."

Here's a look at several forest studies currently underway:

◆**Whitetail deer:** To determine the effects of pine plantations upon the population of whitetail deer in East Texas, Temple-Inland joined with one of the country's leading wildlife experts, Dr. James Kroll of Stephen F. Austin State University, in a five-year study, costing in excess of $1 million. Dr. Kroll is being assisted by two other experts: Dr. Harry Jacobson of the University of Mississippi and Dr. David Gwynn of Auburn University.

◆**Quail:** A three-year study in conjunction SFASU and Dr. Monty Whiting to determine the feasibility of relocating quail to East Texas is nearing completion. In this study, 1,500 acres were groomed to be ideal quail habitat. As the survey nears completion, the area has been repopulated with quail. "We'll learn a lot of things from this study." Dr. Foster said. "Once it's complete, this information will be useful to the company, wildlife specialists, and small landowners who want to improve quail habitat on their land."

◆**Timber rotation:** A key study is underway to determine the impact of growing one pine crop after another on the same land. Temple-Inland wants to determine the impact of this strategy on site productivity. Scientists will collect data, facts and measure the impact in this study. "The impact has never been quantified or measured," Dr. Foster said.

JAY BRITTAIN



Dr. Darwin Foster, Forest Group Land Services manager, is in charge of forestry research.

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Robert Sanders and Bobby Eichler, wildlife technical aids, locate red-cockaded woodpecker colonies on company lands. After locating a colony they mark the trees and begin recording data that will enhance the birds' survival.

ENDANGERED SPECIES

To make sure endangered wildlife and plants are not impacted by the company's operations, Temple-Inland goes to great lengths to identify endangered or threatened species and to continue its management efforts to protect and enhance these species.

The principal endangered species on southern forests in Texas and Louisiana is the red-cockaded woodpecker. Temple-Inland has set aside land for several colonies of the rare bird and conducts research to enhance its survival.

With teams divided by region — north, central and southern — Temple-Inland biologists and forest supervisors identify and protect land used by the bird.

"For the last few years, we've been in the process of identifying active colonies and abandoned colonies," said Wildlife Management Supervisor Joe Hamrick.

Hamrick said the red-cockaded woodpecker is unique among the many other woodpeckers as it inhabits old living pine trees. Most other woodpeckers inhabit dead trees.

"That's one of the primary reasons this bird is on the endangered list," Hamrick said. "Although we are continually planting trees, this woodpecker looks for the 90-year-old tree."

One discovery that could save the bird is man-made tree inserts, which are used by the U.S. Fish & Wildlife Service and the U.S. Forest Service. The woodpeckers move into these inserts immediately and have successfully nested and roosted there.

Hamrick said when the bird is spotted or an abandoned colony is found, a 10-acre minimum tract of land is set aside for the bird. In some cases, more land is set aside, depending on the size of the clan.

On company land in Georgia, a family of endangered gray bats have made a home in the Lowry Bat Cave, and Inland-Rome foresters are carefully preserving the bat's habitat to ensure its continuance. Discovered in 1988, the cave hosts anywhere between 4,000 and 9,000 bats between March and late October.

Inland-Rome officials work with research teams from the Department of Natural Resources and Berry College on the effect of logging practices on the bats' primary foraging habitat..

The gray bats require a woodland corridor to their foraging locations, and one recent study suggested the bats appear to be relatively unaffected by timber harvesting, as most flew immediately and directly across the area after leaving the cave to forage.

The results are encouraging, suggesting that the cutting has minimal or no short-term impact on the bats' flight patterns, according to one research document.

The cave is located in an isolated area among thousands of acres of land, and its location is ideal for the continuance of the endangered mammal, which is on the Georgia and federal lists of endangered species.

"Since we control access to the cave," said Kenneth Gibson, Inland-Rome Forests district supervisor, "we are doing everything possible to give the bats an opportunity to survive." ■

"The red-cockaded woodpecker is unique among the many other woodpeckers as it inhabits old living pine trees."

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TEMPLE-INLAND INC. ENVIRONMENTAL POLICY

WHEREAS, the Company has demonstrated an awareness of and responsibility for protecting the environment in those areas in which we operate, and
WHEREAS, the Company has consistently worked to comply with all applicable federal and state laws, rules, and regulations, and,
WHEREAS, the Board of Directors has, to the best of its knowledge, made all capital investments and decisions required to comply with existing statutes and regulations,
NOW, THEREFORE, the Company hereby demonstrates its commitment to a continuing effort to manage its businesses in accordance with the following principles:

ENVIRONMENTAL PRINCIPLES

These Environmental Principles reflect the Company's continued commitment to protecting the environment and the health and safety of our employees, customers and neighbors. We will strive to meet these values:

1. To comply with existing environmental, health, and safety statutes and regulations.

2. To operate our plants and facilities in a manner that protects the environment, health and safety of our employees and neighbors.

3. To make environmental, health and safety regulations and concerns an integral part of the strategic planning and decision-making process.

4. To continually monitor progress toward environmental goals.

5. To train all employees to understand and act responsibly with regard to environmental quality considerations in their daily business activities.

6. To conserve natural resources by using energy efficiently.

7. To support research and development to identify and control adverse effects of our operations on public health and the environment.

8. To promote recycling efforts when feasible throughout our operations.

9. To carefully review raw materials and production processes which could have a negative impact on human health or the environment.

10. To voluntarily seek and implement wherever possible methods to emphasize the reduction or elimination of wastes.

11. To utilize forest management practices which integrate environmental benefits with fiber production.

12. To emphasize land stewardship ethics which enhance maintenance of forest productivity through a system which incorporates best available management practices, conservation of soil, air and water quality, wildlife and fish habitat.

13. To promote these principles and practices by sharing experiences and offering assistance to others who can benefit from our practices.

No environmental policy is effective unless it is communicated to our neighbors. It will be our policy to put as much emphasis on such communication as appropriate.

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INLAND-ROME LUMBER OPERATION



JAY BRITTAIN

Following a freak, devastating snowstorm, Inland-Rome Lumber Operation has rebuilt its planer building. The mill's woodyard is shown at right.

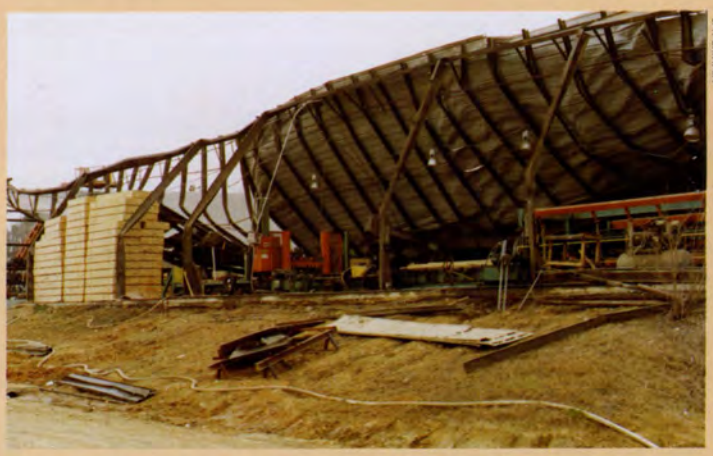
On June 23, it was 92 degrees in Rome, Georgia. It hadn't rained appreciably in 60 days and Inland-Rome's Lumber Division manager, Mark Raspotnik, had just climbed the 76 steps from the sawmill to the division office for the tenth time that day to greet his guests. His shirt and brow were soaked with perspiration.

Though it's unusual for the temperature to be this hot in June in north Georgia, the 142 employees of the Lumber Division have come to expect the unexpected. After all, only three months before, a freak 18inch snowfall had collapsed the roof of the 63,000 square-foot planer building closing down the mill for nine days.



JAY BRITTAIN

View of the southwest corner of the planer building showing its collapsed side walls. The only roof support is the dry sorter.



JAY BRITTAIN

The west side of the planer building shows buckled columns and roof beams after the siding was removed.

Raspotnik is one of three Temple-Inland Forest Products Corporation employees at the Georgia sawmill. The other two are Maintenance Superintendent Spencer Brewer and Green End Superintendent Bob Ragsdale. All others are employed by Inland Container Corporation and Brown and Root Industrial Services.

The mill was designed by Mid-South Engineering, built in 1981 by Georgia-Kraft and acquired by Inland Container after the dissolution of Georgia-Kraft in 1988. It currently produces 71.5 million board feet of dimension lumber ranging from 2x4s to 2x10s. Finished lumber is marketed by Temple-Inland's Building Products Group, and packages are stenciled in blue with the familiar T-Wheel.

Raspotnik says the mill differs from the other mills in Diboll, Buna and Southwest Louisiana. One obvious difference is the absence of a Letourneau tower crane, which both Buna and Southwest Louisiana use to offload logs. Rather, a Letourneau log stacker unloads the trucks, and logs are stored on the ground in long concrete runs. Another major difference is the single chip-n-saw primary breakdown line.

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Inland-Rome Lumber has distinguished itself as the first TempleInland sawmill to bar code its lumber and to customize lumber packages for a major building materials outlet. It set both profit and production records in 1992 and has posted 17 consecutive profit-making months despite the nine-day shutdown due to the planer mill snow damage.



JAY BRITAIN

An inside view of the rebuilt planer building. Sawmill employees were credited with going the extra mile to rearrange work schedules to accommodate salvage and construction crews.

Raspotnik and Finishing Superintendent Carl Stifter credit the sawmill's employees for their willingness to rearranging their work schedules to accommodate the salvage and construction crews.

"Our employees, for the most part, had no power at home for two weeks," said Stifter. "Their lives were disrupted. For three weeks, 22 employees worked on a third shift while demolition and reconstruction were going on during the day. Learning to sleep days with the kids at home because of the snow was not easy. We credit them for the fast turnaround."

"Because of this cooperation and the positive attitude of our employees, our maintenance crews and outside contractors, we were able get our mill back on-line quickly," Raspotnik added. "Our employees went the extra mile on this."



JAY BRITAIN

Inland-Rome Lumber Operation differs from other Temple-Inland sawmills by utilizing a Letourneau log stacker to unload and stack logs.



JAY BRITAIN

Above, Tracy Richardson, Finishing supervisor, and the sensative metal detector at Inland-Rome Lumber's planer mill.



JAY BRITAIN

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Below, Green End Superintendent Bob Ragsdale. In the background is Inland-Rome's linerboard mill.

Two heads are better than one in achieving dramatic downtime reduction

Finishing Supervisor Tracy Richardson and the Inland-Rome planermill had a problem. The planermill was averaging 14 hours per month of non-scheduled planer knife changes due to metal fragments of varying sorts imbedded in the unplaned lumber. Because most of the metal was buried deep in the heartwood, the metal detector used by the mill was not sensitive enough to pick up the metal before it was sent to the planermill.

Richardson contacted Metal Detectors, Inc. for help. Together, Richardson and Metal Detectors, Inc. researched the problem and found a solution. Today, the planermill averages less than an hour per month downtime for non-scheduled planer knife changes. The downtime reduction from an average of fourteen hours per month to one hour average is dramatic.

Richardson reports that the second generation metal detector presently being used at the Rome planermill is probably the first in the market with enough sensitivity to detect non-ferrous materials such as insulators, bullets and copper wire.

Most of the metal found is likely to be nails and bullets that can be traced to hunters who nail deer stands to trees, and use trees for target practice.

The most unusual find was a door hinge in the heartwood of a 40-50 year-old tree. The hinge was imbedded in the tree for half a century before it turned up at Richardson's planermill. ■





JAY BRITAIN

Infeed operator Patrick Vaughn (left) and Machine Operator Ned Beard at the Inland-Rome Lumber's planer mill. The metal detector stretches the width of the line.

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Beetle Mania

THE BAD NEWS BUG

He is less than an eighth of an inch long, smaller than a grain of rice.

He cannot fly in winds over five miles an hour and seldom survives freezing temperatures in the open.

Yet in less than a half-century, this undersized forest pest has become the scourge of Texas' commercial timberlands, homeowners, and park administrators.

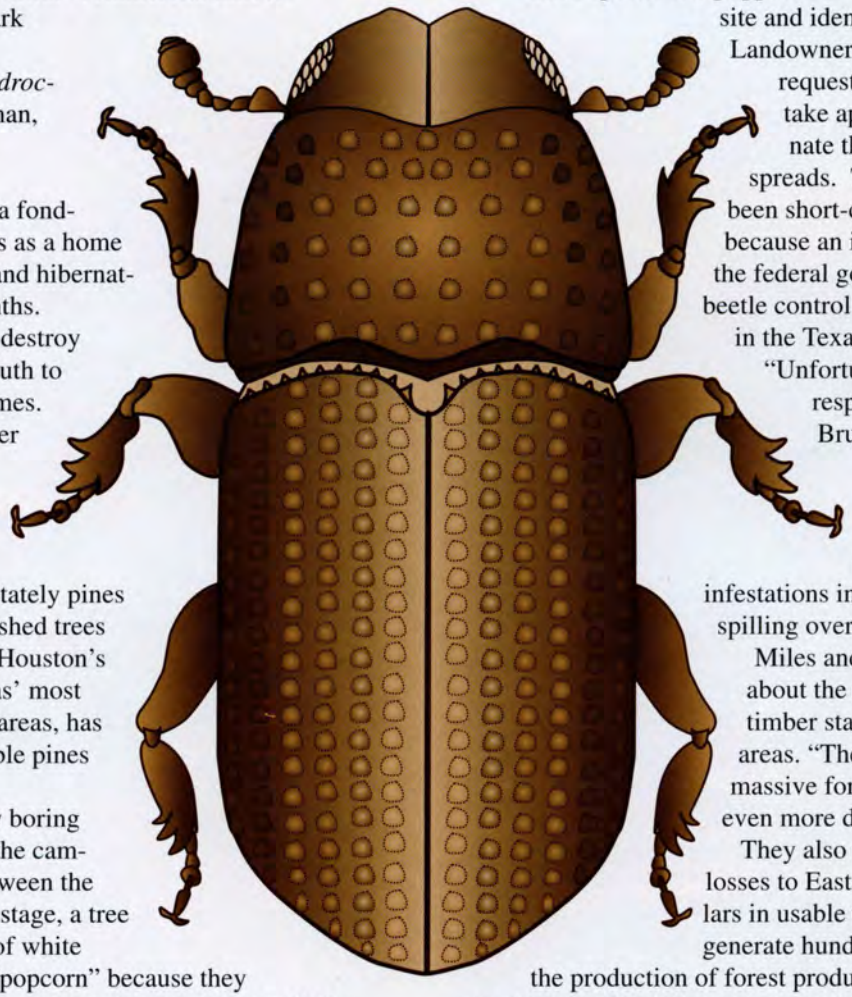
Scientists call him *Dendroctonus frontalis*. To the layman, he is simply the Southern pine beetle.

He gets his name from a fondness for Southern pine trees as a home for rearing his youngsters and hibernating through the winter months.

In a single year, he can destroy enough pine trees in the South to build more than 50,000 homes. Losses to commercial timber total in the millions of dollars each year.

And the figures don't take into consideration the losses of valuable and stately pines in southern parks and cherished trees on homeowners' property. Houston's Hermann Park, one of Texas' most popular urban recreational areas, has lost hundreds of irreplaceable pines to the bug's ravages.

The beetles kill trees by boring tiny S-shaped tunnels into the cambium layer, laying eggs between the bark and wood. In its early stage, a tree under attack shows scores of white spots on its trunk—called "popcorn" because they looked like popped kernels—as the tree tries to fight off the boring beetles. The pine needles turn brown and fall, the bark drops off in chunks, and the tree dies. A tree can die in as little as three days.



Beetle illustration by David Van Hoorn

The Texas Forest Service and the state's forest products companies, including Temple-Inland, make regular air flights over tens of millions of acres on a regular basis each year, searching for the tell-tale reddish brown tops of beetle-infested pines. From the air, the beetle blight is easy to spot.

Each spotter is equipped with a grid map to pinpoint the site and identify ownership of the land. Landowners are then notified and requested by the Forest Service to take appropriate action to eliminate the infestation before it spreads. That strategy, however, has been short-circuited in recent years because an inflexible set of rules by the federal government has thwarted beetle control efforts on wilderness areas in the Texas National Forests.

"Unfortunately, the beetles don't respect property lines," said Bruce Miles, director of the Texas Forest Service. "And, as a result, the wilderness areas contain some of the biggest beetle infestations in history, which are rapidly spilling over onto private lands."

Miles and other foresters worry about the risk of leaving the dead timber standing in the wilderness areas. "The conditions exist for a massive forest fire, which would do even more damage to the forests."

They also worry about the economic losses to East Texas. "Millions of dollars in usable timber which could generate hundreds of new jobs through the production of forest products, like lumber and plywood, are being left to rot on the forest floor," said Miles in a recent speech.

The likelihood of getting the law changed to deal with problems like the beetles appears slim. "Situations like this were

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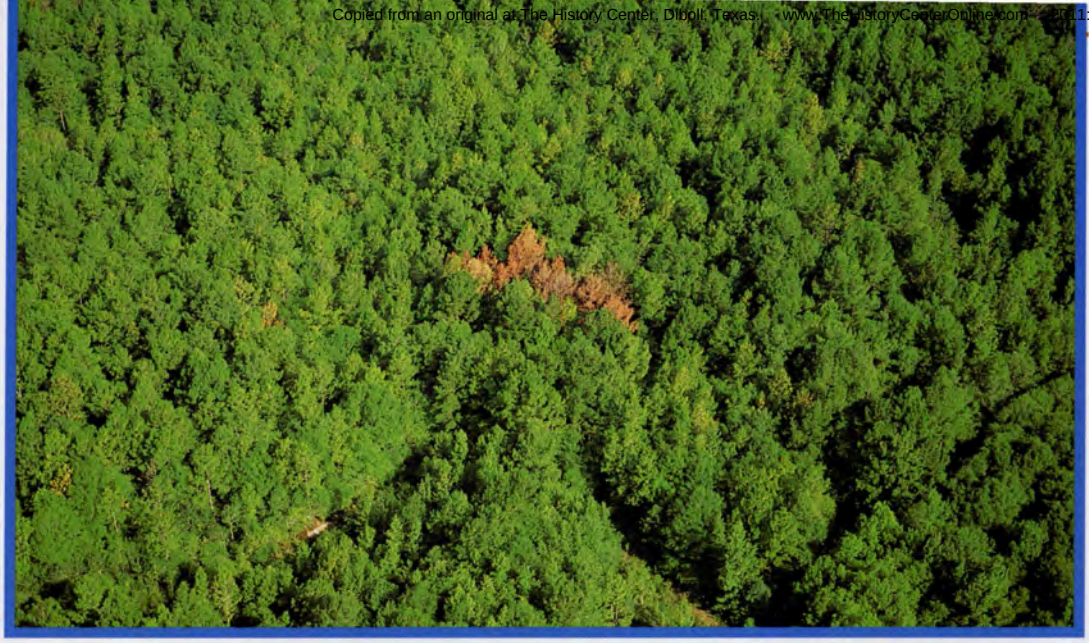

JAY BRITAIN

This Southern Pine Beetle spot on Temple-Inland's Southern Region near Spurger, Texas was controlled by creating a buffer zone by clearing an area 100 feet around the infected area.



JAY BRITAIN

Mike Johnston, Temple-Inland forest supervisor, shows the tell-tale signs of a tree under attack by the beetle--a white substance which looks like popcorn kernels indicating the tree is fighting off the bug.



JAY BRITAIN

Texas' wilderness areas took a beating this summer because of beetle infestations which could not be controlled due to government rules. This is an area of several hundred acres in the Turkey Creek Compartment of the Big Thicket National Preserve. According to State Forester Bruce Miles, areas like this one pose a severe wildfire hazard.

anticipated when the Wilderness Act was enacted," F. Dale Robertson, chief of the U.S. Forest Service, said in a letter to U.S. Senator Phil Gramm of Texas. "The wildernesses were set aside to let natural processes, including insect epidemics, operate without human intervention."

Texas has five forest wilderness areas. All are part of the national forests. And all of them are infested with pine beetles.

Miles said beetle infestations are greater on the national forests because the trees are older. "Not unlike people, the older trees get, the more susceptible they are to disease and insects," he says. "On the wilderness areas, there are severe restrictions for control of the beetles, and by the time an infestation really gets moving, it's like a fire. When the beetles get control, the infestation is already moving so fast and so large that it is virtually impossible to stop."

One way foresters have attempted to dent the spread of the bugs is to clear the area of trees in the direction the insects are flying, hoping the beetles will die if their food source is eliminated. But such efforts are prohibited in the wilderness areas until the problem reaches within a quarter mile of privately held land.

Landowners like Dr. Hiram Arnold, who owns 1,900 acres of forestland adjacent to the beetle-ravaged Indian Mounds Wilderness Area in Sabine County Texas, have mounted a campaign to control the bugs, particularly in the wildernesses. "It's not what I have lost that scares me," Arnold says, "but what I and others will lose if the epidemic continues."

Contrary to popular belief, the beetle is not a newcomer to the South. Serious epidemics have been traced back to as far as 1882 in East Texas.

The bug has been in the region hundreds of years, entomologists believe, but his activities didn't seem to concern anyone until this century when timber emerged as a commercial crop and wood-using industries began to spread.

"The situation is like someone has placed a series of time bombs in the wilderness areas," said Miles. "They're ready to explode any day." ■

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HAMPTON HOMES

Loyalty runs deep

It was 1987 when Tony Kennicott left a prominent Houston building firm and joined with Seth Lincoln to create Hometown Concepts Inc. and their home building affiliate, Hampton Homes. It was then that Tony and Seth's independent partnership began with West Houston's Big Tin Barn. And ever since, the two businesses have worked in tandem to the mutual benefit of both to create affordable living for hundreds of Houstonians.

Seth tells the story. Their first office was a 10' x10' room located off I-10 in East Houston. Their staff of 3 helped them run the business which started as constructors of single family homes and remodeling jobs.

"Things were really lean, but Big Tin Barn went with us. They believed in us and our dream. We've been a customer of Big Tin Barn since day one," he said.

Today the duo runs the business from an office suite located off Beltway 8 and I-45. The staff has grown to 29, and they have completed their third year of closing in excess of 200 single family units in 10 subdivisions in the Greater Houston area.

The company offers three products lines: the first time buyer is offered the "Classic series" ranging in price from the $60s-$90s. For the "move up" buyer, the "Elan Series" is offered from the $70s-$100s. For those wanting semi-custom accommodations, Hampton offers the "Elite Series" beginning at $140,000.



JAY BRITTAIN

Tony Kennicott (above) and partner Seth Lincoln are long-time customers of West Houston's Big Tin Barn. Hometown Concepts Inc. and its home building affiliate, Hampton Homes, specialize in single family construction in subdivisions in the Greater Houston area.



JAY BRITTAIN

Seth Lincoln handles the financial side of Hometown Concepts Inc. The business has grown from a one-room operation to its present size of 29 employees.

Hampton Homes' working relationship with Temple-Inland includes a two-year association with Guaranty Federal Bank F.S.B. for interim construction financing. Hampton Homes is just one of the many Houston builders using the financial services of GSB in the Houston market.

In addition, Temple-Inland Mortgage Corporation is one of the four preferred providers of long-term, permanent financing to home buyers.

Tony sums a up the relationship. "What we like about our working relationship with Temple-Inland is the wide variety of subsidiaries and services they provide in the single family home market including construction financing, mortgage lending and building materials," said Tony. "We have found them to be very professional in our dealings with all of them." ■

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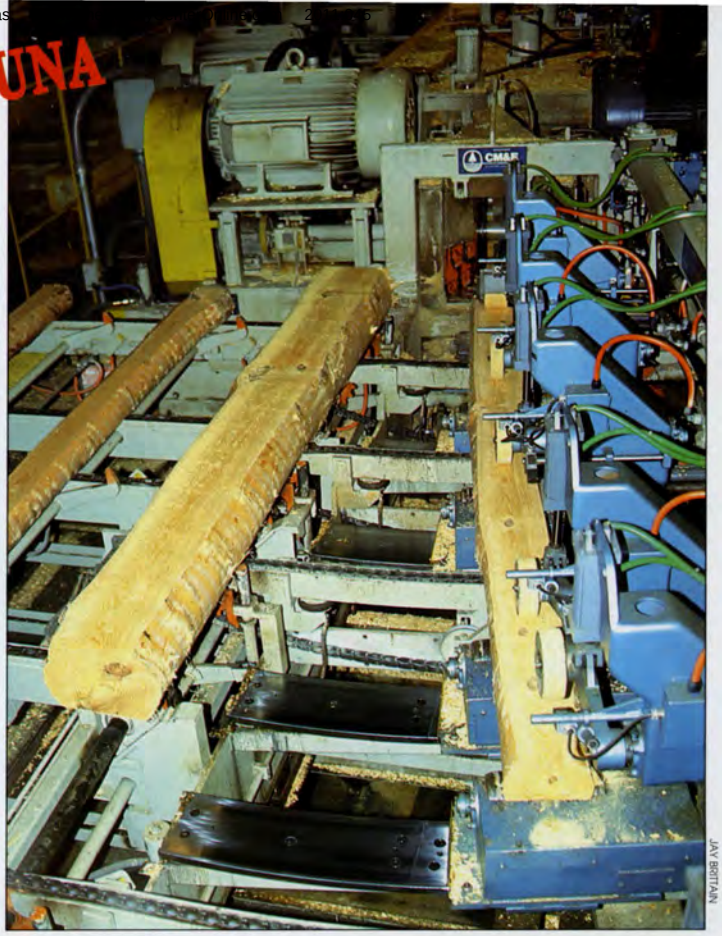
Arc Sawing System Installed At Buna

A first of its kind arc sawing system, which saws logs with sweep of up to 4" on a curve, is operational at Buna Lumber Operation. The system was installed beginning in mid June through July 1.

The system at Buna, a prototype, was developed by United States Natural Resources, a development corporation, whose divisions involved in the project include Schurman Machine, CM&E and Applied Theory, in partnership with Temple-Inland.

According to Plant Manager Bob Barrett, the new system is designed to scan a cant with respect to its shape, permitting more lumber recovery out of each long log.



JAY BRITAIN

Buna Lumber Operation's new arc saw was installed this past summer. The arc sawing system is a prototype developed by United States Natural Resources in partnership with Temple-Inland.



JAY BRITAIN

Gary Sorrell, Maintenance Manager

Current figures indicate a 4 to 5 percent increase in lumber recovery for the volume of logs scanned at the primary breakdown unit.

The cants are laser scanned for optimization of the fiber. The information is fed into a computer which generates a decision on how the cant is positioned on the patented infeed table. Then, it is positioned, held and fed through the chipping heads to the double arbor gang saw and cut.

"Buna personnel continue to make progress along the start-up curve for this major process change," said Barrett. "All cants are now being run at maximum speed. On 8, 10 and 12-inch cants, we are restricting sweep to one inch. Some minor modifications are being made to the lumber handling equipment to improve lumber handling after the cants are sawn." ■



JAY BRITAIN

Delton Harper, Machine Operator



JAY BRITAIN

Joel Watson, Q.C. Technician

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A plant physiologist and a molecular biologist take aim at improving pine trees through genetics research.

GENETIC BREAKTHROUGHS MAY HELP REFORESTATION

Through a research effort sponsored by the Temple-Inland Foundation, researchers have developed techniques that can move desirable genes into slash pine and then clone the new tree.

The development, a first for the important commercial pine tree species, is hailed as a breakthrough that will lead to improved reforestation in the state.

"We now have the technology for transferring genes into the slash pine, and we know we can clone them," said Dr. Ron Newton, a plant physiologist and member of the forest genetics research team at the Texas Agricultural Experiment Station in College Station, Texas.

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More than 133 million tree seedlings are planted annually in Texas by the state's timber companies, but as much as one-half of the seedlings sometimes die during the first year mainly because of drought during critical summer months and in subsequent years because of disease.

"If you figure what those trees would have been worth if they lived to harvest, the loss represents about $50 million in Texas a year," said Dr. John Cairney, a molecular biologist.

Most of the 22 million acres of pine and hardwood forests in East Texas are loblolly pines. Plantings of slash pines in Texas have decreased in the past 10 years, because the trees are highly susceptible to rust disease, Newton said.

But the new genetic technology eventually may enable researchers not only to insert rust resistance into slash pines but to select a variety of specific traits for other tree species as well.

Traditional cross breeding methods for trees can be frustrating, the scientist noted, because it takes years to grow the tree to maturity, and many undesirable traits, along with the desired characteristics, may be inherited from the two parents.

"It's like having to buy an entire grocery cart full of products when you only need one or two items," Cairney said. "Through gene cloning and transfer, we hope to pick up only those items that we want."

Tomorrow's commercial trees, therefore, may trace their roots to a glass forest of test tubes under light in the forest lab on the Texas A&M University campus where tiny green pine needles are being coaxed into growing roots in special culture. It's a slow process even with the biotech advances.

Cloning trees and other woody plants has been difficult, Newton said, in part because they have much more DNA than other types of plants.

"Trees present more of a challenge to manipulate," Newton said. "They have about 10 times the amount of DNA as a corn plant, for example."

"Junk" DNA is what some researchers call it. "It's like packing material," Cairney said. "Only about 5 percent of the DNA contains codes that will make a product. The rest may be junk."

To help sort the functional from the so-called "junk" DNA, forest geneticist Dr. Johannes Van Buijtenen is creating a genetic "map" of the slash pine, the first such map for an important commercial tree. The map helps identify the parts of different chromosomes that are responsible for traits, especially where the genes are located.

The breakthrough with slash pine stems from a series of discoveries by the Experiment Station forest genetics team. Few others in the world are examining trees from the molecular level to the grown, Cairney said.

In particular, no one has attempted to characterize drought-responsive DNA in loblolly pine. That is now a major effort for Cairney.

"We analyze genes switched on during drought to determine what they do and how they do it. This will allow us to modify genes and reintroduce them into pine to enhance desirable traits," he explained.

Drought tolerance is a priority in Texas because fluctuations in rainfall, especially during the summer when new plantings are trying to become established, cause many new trees to die. Cairney, looking at what happens at the molecular level when a plant is stressed, has identified some drought-responsive genes from the saltbush, a desert-like plant that grows in far West Texas, which may be used in the pines.

"Plants can't run away when the weather is dry or where there is environmental stress," Cairney said. "So they respond by switching on different sets of genes." Plant leaves may be white if forced to grow in the dark, but turn green when put in light, for example, or a seed planted in an upside down pot will extend stems then bend upward to grow. Cairney said plants communicate such messages at the molecular level.

With the technology in place for cloning transformed pine trees, the researchers also will address other forestry problems such as insect damage, diseases and tree shape, he said. Research by the team has proven that at the molecular level, trees are similar to agricultural crops. The team found that a "promoter," or element that controls a gene, taken from a carrot could function accurately in pine cells. Also, pine promoters are much like similar genes in cotton, rice and carrots, the researchers found.

"That discovery was a great boost, because now pine genes might be transferred to 'model plants' and their function evaluated," Cairney said.

Using a common weed, arabadopsis, which is a "lab mouse" of the plant world, the researchers can experiment with promoters for the desired traits before transferring them to pine trees.

"If we find that gene 'X' causes the arabadopsis to be more tolerant of an insect or disease, then we can take gene 'X' and transfer it into the pine tissue," he said. "And the knowledge we gain from understanding pine trees at the molecular level may be applicable to other plant species as well."

Van Buijtenen's maps may depict the genetic difference of drought resistant slash pine and regular slash pine. The researchers then would identify the desired code and clone that trait. "People assume that the Texas forests are as productive as they can be," Newton said. "But they could be much more productive if improved species are planted when forests are regenerated."



KEN CHILDRESS

Genetic advances in tree regeneration may enable scientists to select a variety of traits for tree species. Above, currently, Temple-Inland can obtain superior pine seedlings through cross pollination at the company's breeding orchard near Jasper, Texas.

"People assume that the Texas forests are as productive as they can be. But they could be much more productive if improved species are planted when forests are regenerated."

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by Tony Bennett

Tax incentive needed for pollution control equipment in Texas

On November 2, Texas voters will decide the fate of a constitutional amendment important to Temple-Inland and industry statewide. The amendment, HJR 86, authorizes a tax exemption for pollution control property. Sponsored by Reps. Mark Stiles, Hugo Berlanga and Robert Earley and by Sen. Ken Armbrister, HJR 86 passed by an overwhelming majority in the Texas Legislature.

Appearing as measure No. 2 on the ballot, the proposition reads as follows: 'The constitutional amendment to promote the reduction of pollution and to encourage the preservation of jobs by authorizing the exemption from ad valorem taxation of real and personal property used for the control of air, water, or land pollution."

The major industries hardest hit by pollution control requirements - paper, chemical, energy, refining, manufacturing — are also those that generate wealth, support the tax bases for local governments and create high-wage jobs that fuel the state's economy.

Environmental compliance has become one of the leading costs of doing business in the United States. As Texas is a major energy producing and manufacturing state, the state's industries absorb a substantial share of these costs. Over the next few years, Texas companies will spend billions of dollars to comply with federal, state and local environmental standards and to voluntarily reduce the amount of pollutants discharged into the environment.

The Clean Air Act Amendments of 1990 and other environmental laws will require enormous investments in pollution control equipment over the next decade. As other costs also rise, Texas businesses will be placed at an increasing competitive disadvantage with other states and countries that offer economic incentives for business location and pollution abatement.

The major industries hardest hit by pollution control requirements - paper, chemical, energy, refining, manufacturing — are also those that generate wealth, support the tax bases for local governments and create high-wage jobs that fuel the state's economy. Small businesses, which employ more than half of all Texas workers and produce more than 50 percent of all toxic emissions, are equally hard hit.

In our global economy, the export of jobs to other countries has become as common as it is controversial. Unfortunately, when it comes to environmental regulation, many other countries are not as stringent as the United States. This regulatory disparity creates a significant competitive disadvantage for domestic U.S. businesses. In some cases, the cost of retro-

HERE IS WHAT HJR 86 WILL AND WILL NOT DO:

- ***Authorizes a limited property tax exemption for businesses that are required by law to install pollution control equipment to meet government mandated environmental standards.***
- ***Brings Texas in line with at least 33 other states and many other countries that offer tax incentives for pollution control. Without this tool, Texas will lose capital investment, damaging the state's economy and local tax bases.***
- ***Takes no property off the tax rolls. The exemption applies only to property constructed, acquired or installed after Jan. 1, 1994.***
- ***Exempts only property used to control pollution. Property that increases productivity or capacity, or that otherwise adds to the value of the entire property, will not be exempt.***

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JAY BRITAIN

Texas voters will decide on November 2 whether companies such as Temple-Inland may be tax exempt for pollution control property capital expenditures. Above is Temple-Inland's Fiber Products Operation.

fitting a U.S. plant to comply with environmental standards exceeds the cost of building a new plant in another country. If a product can be produced at a lower cost in another country, an existing Texas plant may lose its economic viability and, even if it manages to avoid reducing production and laying off workers, no new capital investment is likely to be made.

In recognition of the need to retain and attract industries that bear the brunt of pollution control requirements, a majority of states have enacted some form of tax relief for property used for pollution abatement. State tax relief usually comes in the form of a sales and/or property tax exemption, or a credit against or deduction from income-based taxes for investments in pollution abatement. At least 33 states exempt from taxation part or all of a transaction involving pollution control equipment. Some 15 of those states grant either full or partial property tax exemptions or provide for special appraisal of pollution control property. Many of Texas' primary economic competitors — Louisiana, North Carolina, New York, Ohio, Pennsylvania, Michigan and Illinois — exempt pollution control from one or more types of taxation.

Temple-Inland believes it is time for Texas to join the increasing number of major industrial states that recognize the need for pollution control tax relief. Favorable government tax policy, such as the pollution equipment tax exemption appearing as Proposition 2 on November 2nd, will help to make Texas cleaner and, at the same time, more attractive to new industry bringing high wage jobs to our state's economy.

IN OUR GLOBAL ECONOMY, THE EXPORT OF JOBS TO OTHER COUNTRIES HAS BECOME AS COMMON AS IT IS CONTROVERSIAL. UNFORTUNATELY, WHEN IT COMES TO ENVIRONMENTAL REGULATION, MANY OTHER COUNTRIES ARE NOT AS STRINGENT AS THE UNITED STATES.

For further information concerning Proposition 2 and other constitutional amendments, contact Tony Bennett, vice president Government Affairs at 409/829-1430. ■

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INLAND CONTAINER CORPORATION
A HISTORY

As the U.S. moves more toward recycling as a way of life, Inland Container Corporation is uniquely postioned as one of the country's leaders in the production of corrugated boxes.

By embracing recycling concepts long before other containerboard producers did, Inland today is recycling in excess of a million tons of old corrugated boxes as raw materials in its paper mills each year.

As early as 1975, Inland saw recycling as a major issue when its Newport, Indiana, mill went on stream as the first corrugating medium mill built in the U.S. to use 100% recycled fiber as raw material.

"While some competitors share our goal of being a low-cost producer, we have been the leader in the development of recycled linerboard"

An even stronger commitment to recycling was made in 1985 when the company's new Ontario, California, mill, also started using 100 percent recycled fiber.

With the recent completion of a new mill at Maysville, Kentucky, and renovations to its Orange, Texas, mill, Inland will play a role in diverting from landfills and incinerators enough old corrugated boxes to fill a 88-story building the width and size of a football field.

With the startup of Maysville, Inland is now the only company capable of efficiently providing to its customers nationwide boxes made of 100% recycled paper produced in the company's own mills.

A corrugated box consists of two exterior sheets of linerboard and a fluted material made from corrugating medium as an inner core. Historically, linerboard was manufactured from virgin fiber while corrugating medium could be either virgin fiber or recycled from old boxes.

Clifford Grum, Temple-Inland's chairman and chief executive officer, says, "Our strategy in this segment of the business includes two goals. One, to be a low-cost producer of quality boxes throughout the U.S., and, two, to develop the capability to manufacture a fully recycled quality box for national distribution."

"While some competitors share our goal of being a low-cost producer, we have been the leader in the development of recycled linerboard," said Grum.

William B. Howes, chairman and chief executive of Inland, says the company is committed to providing all of its customers with consistently excellent service, quality products and total value.

"Inland's emphasis on quality and service, and its ability to serve national customers' corrugated needs geographically with 39 box plants, is helping Inland outpace the industry and gain market share in a competitive environment," said Howes.

STEVE RABEY



"While some of our competitors share our goal of being a low-cost producer, we have been the leader in the development of recycled linerboard," said Temple-Inland Inc. chairman and CEO Clifford Grum. Inland Container's latest 100% recycled linerboard mill is located in Maysville, Kentucky.

Headquartered in Indianapolis, Inland is bigger than most people envision.

The company operates linerboard mills at Rome, Georgia, as well as Ontario, Orange and Maysville; corrugating medium mills at New Johnsonville, Tennessee, Newark, California, and Newport, Indiana ; and corrugated container plants in Arkansas, California, Florida, Georgia, Illinois, Indiana, Kansas, Louisiana, Mississippi, Missouri, Minnesota, New Jersey, Ohio, Pennsylvania, South Carolina, Tennessee, Texas, Virginia and Puerto Rico.

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STEVE RABEY

Old corrugated containers or OCC make up 42% of the Maysville mills total furnish, establishing the mill as the industry leader in consumer recycling.

Inland also operates these subsidiaries and divisions:

- Roxcord Paper Company, a tape manufacturing plant in Milwaukee.
- Crockett Container Corporation.
- Parkway Container Corporation.
- A 20% interest in a glass container plant operated by Owens-Illinois in Puerto Rico.
- A 20% interest in a chemical company operated by Harima MID, Inc. in Kakogawa, Japan.

Dating back to 1925 when Herman C. Krannert moved to Indianapolis and founded Inland Box Company (including Anderson Box Company, which he created in 1918), Inland has a long and varied history in the paper industry.

Krannert and George Mead of the Mead Corporation built Georgia Kraft Company at Macon, Georgia, in 1945, launching a 40-year partnership. Georgia Kraft added a second mill at Rome, Georgia, in the 1950s.

Inland kept expanding in the l960s and 1970s, adding 19 box plants, entering the glass container business with the purchase of Fairmount Glass Company (later sold), and moving to the West Coast with the acquisiton of several plants in California.

By 1978, Inland sales had doubled from the start of the decade to $397 million, and the company became a part of Time Inc. By 1980, the company had sales of $597 million.

In 1984, Inland, along with Temple-Eastex, were spun off from Time Inc.

Since then, Inland has enjoyed significant growth with the construction of the Ontario mill, the acquistion of Orange and three box plants from Owens-Illinois, the dissolution of Georgia Kraft with Inland becoming the sole owner of the Rome, Georgia, mill; and the construction of box plants in Edison, New Jersey; Ontario, California; Edinburg, Texas; and Petersburg, Virginia.

In addition, Inland has bought Crockett Container, which operated four box plants; and purchased Indianapolis-based Pakway Container, which operates three box plants.

Inland built its Graphics Resource Center in Indianapolis in 1992, featuring the largest linerboard preprint press in the U.S.

Inland sales in 1992 totaled $1.25 billion and pretax earnings were $112.3 million. Containerboard production reached 2.3 million tons and box sales totaled 1.9 million tons.

In October, Inland entered its first venture in Mexico by breaking ground on a new corrugated box plant. ■

MAYSVILLE

A Mill of Firsts

When Inland Container Corporation started up its new 100% recycled linerboard mill at Maysville, Kentucky, last year, it set a number of precedents in the container industry.

▲ It became the first mill in North America to utilize an advanced, ultra-efficient, lightweight contaminant removal process for a cleaner brighter sheet of paper.

▲ It started up with the largest long-nip press in North America.

▲ It opened with special bonding and densification techniques to dramatically improve ring crush performance and mini-fourdrinier technology to put the best fibers on the paper surface for better printability.

▲ With a trim size of 281 inches, Maysville also minimizes trim problems, which means better and more responsive deliveries.

▲ An advanced machine fabric design enhanced bonding, formation and retention.

Maysville has an annual capacity of 220,000 tons of linerboard.

The mill also put Inland far ahead of the paper industry with a post-consumer recycling rate of 42% of total mill output.



STEVE RABEY

The Maysville mill became the first mill in North America to utilize an advanced, ultra-lightweight contaminant removal process for a cleaner, brighter sheet of paper.

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Leave it To Beaver


JAY BRITTAIN

Beavers return to East Texas, creating a nuisance for foresters

Like man, they build their homes out of wood, they cluster in families, and they often make a mess of their neighborhoods.

There are more of them in East Texas today than there were 20 years ago, but they're seldom seen. They're also shy, preferring to work and play out of sight.

They're beavers—and they're showing up with increasing frequency in the forests of East Texas—frequently making a nuisance of themselves by damming streams, flooding forests and roadways, and interfering with forest replanting and regeneration efforts.

"They'll often dam up a small tributary of a major creek, and cause acres and acres of damage by flooding the land."

Beavers were plentiful in East Texas in the 1880s, but were over-hunted for their valuable fur and disappeared from the region by the turn of the century. Then in the 1960s, they began to show up in greater numbers, often settling along the streams and creeks of East Texas.


JAY BRITTAIN

A beaver dam in Jasper County, Texas.

Norman Davis, a hardwood forester with Temple-Inland, says East Texas' beavers probably migrated from the Mississippi Valley and today constitute a growing problem for Southern and Texas timberland owners trying to manage their lands for wood fiber.

"Beavers are opportunists," says Davis. "They'll often dam up a small tributary of a major creek, and cause acres and acres of damage by flooding the land."

Davis estimates that up to 2,000 acres of Temple-Inland's forestlands in East Texas have been flooded by beaver dams, but he adds: "That may be only a fourth of the problem. They're becoming a much greater problem since each dam can flood 60 to 100 acres."

To control the problem, Temple-Inland is working with federal and state wildlife agencies to explore ways to keep the beavers' damages to a minimum. The problem is compounded by the fact that the beaver has no natural predator.

"The possible creation of a jurisdictional wetland where none existed before, through the activity of beaver, is a bigger, more serious issue," said Davis. "If the water stays on the land for a number of years, a much different plant community will occupy the site than before the water was trapped there. The Corps of Engineers would then be responsible for permitting any management activity in the area."

"The beaver is an incredibly awkward creature on land, but he's a wonderful swimmer and loves the water," said Davis.

Beavers live in family groups or colonies. The family usually consists of the parents and their young of the past two years. Together, they cut trees, build and repair their dams and lodges, and store branches for the winter food supply.

This work makes them the most remarkable engineers among all rodents—the order of gnawing mammals to which they belong. And among all mammals, only men are better engineers.


JAY BRITTAIN

Dead timber stands in water due to flooding caused by a beaver's dam.

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For felling trees, a beaver uses his front chisel-edged front teeth, taking only a few minutes to cut down a small willow tree. Occasionally, a beaver will tackle and fell trees as large as two feet in diameter.

Favorite beaver trees are softwoods like sweetgum, ash and willow, but he can fell almost any kind of tree with enough patience.

Selecting a tree to cut, a beaver gouges out first one chip and then another two or three inches below the first. Next he tears out the middle wood between the two chips. Working in this way, he girdles the tree, then cuts deeper and deeper until the tree falls.

Beavers cannot control the direction in which the tree falls. As it begins to totter, he dashes for safety. When the tree is down, he returns to work, first making a meal of the tender green bark, buds and twigs. Holding a section of wood in his hand-like front paws, he nibbles away like a person eating corn on the cob. Stomach full, he starts cutting the tree into convenient lengths for moving to his pond.

To build a dam, beavers drag the branches to a place they've selected in the stream. The branches are laid side by side, parallel to the current, with the butts often thrust into the bottom to anchor them. Mud and debris are piled on top layer by layer until the dam is built. To prevent leaks, the beavers plaster the upstream face with mud, leaves, and stones.

Once a stream is dammed, the beavers usually build an island lodge. Pulling boughs and branches into the water, they build a broad foundation of sticks and wood, sometimes as much as 30 feet across and five to eight feet above the pond's surface.

When the outer structure is complete, the beavers plaster the chinks and holes with mud and debris. A section of the roof is left unchinked as an air hole. Underwater entrances lead to the main living space, which is hollowed out above the water level. This chamber may be as big as eight feet across and four or five feet high.

While they're a nuisance to foresters, beavers have some good points. Their ponds act as fire guards in the forests, they provide homes and breeding places for fish and wildlife, and their dams help control floods and conserve water. They also keep soil from washing away. ■

JAY BRITTAIN



Some beavers may be as large as this one, estimated to weigh over 50 pounds.

JAY BRITTAIN



Temple-Inland's Hardwood Management Forester Norman Davis says that it is possible for beaver activity to create a jurisdictional wetland where none existed before. Below, land flooded by beavers.

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Lindsey Springs: The first of the Southern Pine logging camps.

As Temple-Inland moves closer to the 1994 centennial of the founding of one of its predecessors, Southern Pine Lumber Company, historians in Angelina County are preparing to mark the site of Southern Pine's first logging camp, a settlement known as Lindsey Springs.

A historical marker approved by the Texas Historical Commission will be placed at the site of the logging camp near Diboll later this year.

The events that led to the establishment of Lindsey Springs were set in motion in 1893 when lumberman T.L.L. Temple stepped off the Houston, East and West Texas Railroad to found the town of Diboll.



JAY BRITAIN

Mrs. A.B. (Frankie) Glass, a former resident of Lindsey Springs, remembers riding in the caboose of a log train with her mother to visit her grandfather's farm in Diboll.

Temple's acquisition of the Diboll townsite and an initial 7,000 acres was followed in 1898 by the purchase of another 8,000 acres in the Thomas Caro and LaBaume land surveys—a tract of land containing a flowing spring where dozens of logging families came in 1899 to establish a camp for the purpose of providing logs for the new Diboll sawmill.

In the late 1800s, it was common for logs to be carried to the sawmills of East Texas on wagons pulled by oxen and mule teams. As the distance became greater, tram rail lines became more practical, and it wasn't uncommon for logging camps to be moved from place to place as the logging locomotives reached deeper into the woods.

One Angelina County logging camp, known as Acol, was moved around from site to site, using boxcars containing a commissary store, a post office, family housing and other necessities of community life.

Lindsey Springs, named for Angelina County Treasurer Thomas J. Lindsey, had a population in 1900 of about 110 people, including a boarding house with 11 boarders. The town's workforce included teamsters, saw filers, tie makers, section foremen, logging contractors, carpenters, a potter, store clerks, and laborers.

Residents of the camp came from a variety of states, including South Carolina, Illinois, Louisiana, Mississippi, Arkansas, Georgia, Florida, Pennsylvania, Missouri, and Tennessee. Germany and Norway were also represented.

William C. Martin, who later became bishop of the United Methodist Church and president of the National Council of Churches, lived in Lindsey Springs around the turn of the century. Martin revisited the site in 1968, remembering that the town was built in three sections, all surrounding the natural springs which provided water for the camp.

Martin also recalled a commissary store, school, a church, and about 25 clapboard houses.

Mrs. A.B. (Frankie) Glass, who also lived at Lindsey Springs, remembers that the houses were built high off the ground. Most were small and constructed of lumber with attached porches.

Life wasn't easy in the camp, Martin told a Diboll Free Press reporter in 1968. "The men worked long hours, sometimes from before sunup until after sundown. the women worked just as long, and living conditions were not always easy. The pay wasn't much either, and it wasn't often that we went anywhere to spend what we had."

By 1898, Southern Pine Lumber Company operated a narrow-gauge railroad six or seven miles long, which became the start of a line known as the Texas Southeastern Railroad. Part of this line extended east from Diboll and was used to transport logs from Lindsey Springs to the Diboll sawmill.

Mrs. Glass recalled riding in the caboose of the log train with her mother to her grandfather's farm near Diboll.

Around 1906, most of the marketable timber around Lindsey Springs had been cut and the logging camp was moved to Trinity County, about 15 miles west of Diboll. The new camp was renamed "Camp No. 1."

Logging camps such as Lindsey Springs were of major importance to early sawmills in East Texas. They supplied timber to the mills and served as outposts of company operations in the forests.The camps, however, usually lasted only as long as the timber lasted.

Today, with more modern and logging equipment now available, logging camps such as Lindsey Springs are a part of the past. ■

(Historical material supplied by the Diboll Historical Society, Rebecca Bailey, and Marie Davis)

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HOW PAPER SERVES FOOD PROTECTION AND PRESERVATION.

(Second in a series based on "Packaging in America in the 1990s," by Dr. Robert F. Testin and Peter J. Vergano.)

Nowhere is the role of retail packaging more visible to the consumer than in the delivery of food in a safe and wholesome condition.

Food and beverage packaging accounts, by far, the greatest proportion of the industry—approximately two-thirds of the $70 billion industry in the U.S.

Food packaging more closely touches our lives than other branches of packaging as new technologies and trends appear first in the food sector and then find their way into other packaging branches.

In a modern supermarket, all but the fresh produce is generally packaged, either by the manufacturer, distributor or retailer. And after the supermarket basket is full, the purchases are again packaged in paper or plastic bags for the trip home.

Food is our most perishable commodity, subject not only to spoilage from the moment of harvest, slaughter or manufacture, but also vulnerable to attack from a vast array of living things ranging from microbes to insects to rodents and other vermin.

Food spoilage in the U.S. accounts for less than 3% for processed food and 10 to 15% for fresh food. In lesser developed countries, food spoilage due in inadequate or non-existent packaging can reach 50%.

The food preservation practices of drying and salting used in antiquity were the main methods of food preservation available until the past century. Even in this century, many U.S. people ate mostly fresh foods when they were in season, and dried, salted or stored foods when they were not. Losses due to spoilage and vermin were high. Preservation methods were often haphazard.

But the development of a whole new host of materials and packaging forms in the latter part of the 1800s and the first decades of this century opened the door to today's modern packaging systems.

After World War II, the pace accelerated with the rise of the modern supermarket and the widespread use of freezing as an alternative to canning. Television led to the development of one of the most famous food packages, the TV dinner tray.



JAY BRITTAIN

Food spoilage in the U.S. accounts for less than 3% for processed food and 10 to 15% for fresh food. In lesser developed countries, food spoilage due in inadequate or non-existent packaging can reach 50%.

In a parallel, food distribution channels changed dramatically as the country moved from a rural to an urban society. Distribution distances for food products also spread.

The 1960s and 1970s saw an acceleration of the trend to single-person and two-income families, leading to a demand for convenience foods, carry-outs and smaller individual portions.

The 1980s were marked by a continued trend to convenience, coupled with a concern for health that resulted in a demand for natural foods and fresh foods. Microwave technology alone has been responsible for a whole new family of packaging.

Today's consumers can choose from a vast array of food products in serving sizes compatible with their needs. Fresh, frozen, canned, condensed, and dried foods are readily available.

All of this is made possible through the combination of modern food processing and food packaging technologies. ■

(Next issue: The role of packaging in distribution.)

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SCHOLARSHIP APPLICATIONS AVAILABLE

High school seniors who are interested in applying for Temple-Inland Foundation Scholarships are encouraged to obtain applications from local human resources offices of Temple-Inland Forest Products Corporation or Financial Services or by writing the Foundation at P.O. Drawer 338, Diboll, Texas, 75941.

Sons and daughters of active or retired employees of Temple-Inland Inc.'s Forest Products Corporation and Financial Services subsidiaries may apply for Temple-Inland Scholarships, provided the parent has completed three (3) years of continuous full-time service as of April 1, 1994.

Applications should be completed and returned to the Foundation no later than March 15, 1994.



JAY BRITAIN

Wayne Carr and Don Tantzen welcomed guests to the open house of the Bleached Paperboard Group's Silsbee office. Southern sales, customer service, scheduling, and credit departments are officing here.

MATCHING GIFTS PROGRAM

Retirees added to those eligible to use program

Temple-Inland retirees (defined as those receiving retiree benefits from the company) are now eligible to utilize the Matching Gifts Program through the Temple-Inland Foundation, according to a new change in the eligibility requirements of the Foundation.

The matching gifts program will match an eligible employee or retired employee's contribution to an eligible organization up to $3 for every $1 donation. In other words, if you donate $25, the Foundation will send a check for $75 in your name. The funds can be matched to scholarship funds within educational institutions, to public broadcasting services, to art or historical museums, health care institutions, alumni funds and many other worthwhile organizations.

To take advantage of this program, simply fill out the application form and send it in with your payment to the qualifying institution or organization. Please direct all inquiries to Evonne Nerren, Foundation vice president, (409) 829-1721, or write to the Foundation at the following address:

Temple-Inland Foundation
P.O. Drawer 338
Diboll, Texas 75941



JAY BRITAIN

Judy Blalock and Scott Willcutt are among the sales staff that paid personal visits to builders to introduce Stretch 54.

Temple-Inland Stretch 54

Addressing the customers' needs has long been a priority at Temple-Inland.

Now, a newly-created building product is meeting those needs in a revolutionary way.

Stretch 54, a new Gypsum board, is being promoted throughout the country by the Temple-Inland sales staff.

Stretch 54 works like this:

When covering 8 1/2 or 9-foot walls, horizontally installed, 48-inch Gypsum wallboard always comes up short. An additional piece of Gypsum has to be cut to fill in the gap, requiring extra time, labor and material.

Now, Stretch 54, the 54-inch wide Gypsum wallboard, eliminates the need for extra cutting and joint treatment so the job can be finished quicker with a stronger, smoother wall. In short, Stretch 54 saves time, reduces labor, saves material and establishes strong, smoother walls.

The idea to production took only six months and, according to Product Manager Jim Rush, that's an exceptionally fast time for product development.

"Through the efforts of several employees, we were able to generate the idea and follow it through with production in just a matter of months," Rush said. "It took an exceptional job throughout the process to get Stretch 54 to the marketplace.

"Overall, Stretch 54 is an innovative new product that is revolutionizing many markets," Rush said.

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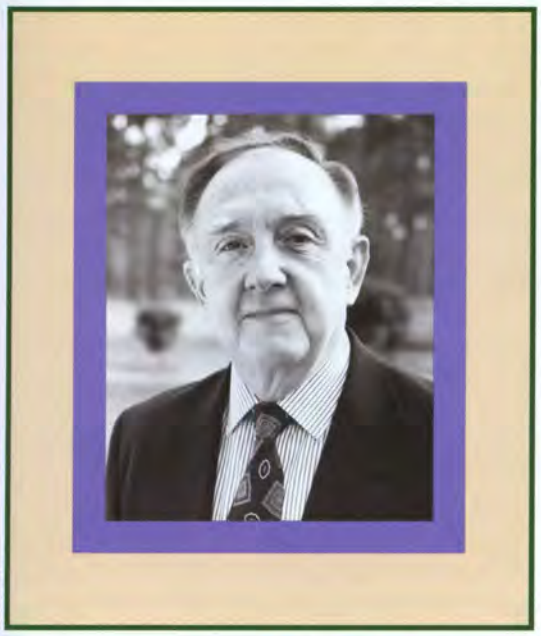

JAY BRITAIN

Pete Smart, Manager of Marketing Services for the Building Products Group

Smart Receives Honor

Pete Smart, Manager of Marketing Services, has been named Associate Member Representative of the Year by the Lumberman's Association of Texas.

Smart, of Diboll, Texas, is a 28-year veteran of Temple-Inland.

The honor is given each year to honor outstanding service in the Lumberman's Association of Texas (LAT), which is headquartered in Austin.

"Temple-Inland has always provided quality service, and Pete Smart has, for many years, supported and participated in LAT as a convention exhibitor, sponsor, advertiser and committee member," said Executive Vice-President Barbara Douglas. "We salute Pete and Temple-Inland for being long-time leaders in the Texas lumber industry."

Smart said, "LAT is a fine organization, and I'm honored to have received this award."

Smart joined Temple-Inland in 1965 as a sales trainee after receiving his BBA degree in marketing from the University of Georgia. He has worked in Charlotte, NC, Louisville, KY, and Atlanta, GA, with the company before moving to Diboll in 1970.

Smart has held numerous director's positions on community boards including Diboll School District, the United Way, the Lufkin Workshop & Opportunity Center, and the Angelina County Chamber of Commerce.

Smart and his wife Donna have two sons: Joseph, 20, and Roger Jr., 17.



KEN CHILDRESS

Temple-Inland Food Service Corporation officials talk over the expansion of the company's Carlisle, Ohio carton converting plant which includes the addition of a 36" high speed 7-color Rotogravure press (background). The officials include David Ashcraft, Temple-Inland Inc. group vice president, Bleached Paperboard; Walter Jacks, press installation project manager and Sacramento plant manager; and Bill Bausmith, plant manager at Carlisle.

Bear recovery effort gets national conservation award

Louisiana's Black Bear Conservation Committee (BBCC) has been selected as the a 1993 recipient of a Chevron Conservation Award.

Temple-Inland Forest Products Corporation is a charter member of the BBCC and Darryl Stanley, Temple-Inland Wildlife Manager, is the Texas vice chairman.



The BBCC is a diverse coalition working to manage and restore the Louisiana black bear to suitable habitats in its historic range in East Texas, Louisiana, Mississippi. The committee is compose of representatives from forest and agricultural interests, conservation organizations, state and federal agencies, and several universities.

The Chevron Conservation Awards Program honors outstanding contributions to the conservation of our nation's national resources. Now in its 38th year, it is the oldest privately sponsored program of its kind in the U.S.

Beneficiary Designations

Is your beneficiary designation up-to-date for your life insurance?.....for your Thrift/Savings Plan?

Who would receive these benefits if there is no named beneficiary?

You have a say in who receives these benefits, but you must make a beneficiary designation. Periodically you should review your records to see if these designations are current. If not contact our Human Resources Department to make a new designation.

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NEWS YOU CAN USE

Your Temple-Inland 401(k) Plan:
NOW BETTER THAN EVER

In March, employee meetings were held at all Temple-Inland operations to introduce employees to the great new benefits now offered through the 401(k) Plan. Just in case you missed it, here's a summary...

Daily Asset Pricing — The value of your 401(k) account is now computed every day using daily closing market prices. By computing the value of your account every day, the Plan can now offer services like...

Daily Transfer Processing — Remember when you had to wait until the end of the month or until the end of the quarter to transfer money from one investment fund to another? With daily asset pricing, you can now make same-day transfers between investment funds by calling the Participant Services' toll-free telephone number.

Faster Distribution Processing — No more waiting until the end of the month or the end of the quarter to receive a distribution from your Plan account. Just call Participant Services to get a distribution kit, complete the application, and return it to your Human Resources representative. Your distribution will be mailed to your home address just a few days after you return your distribution application.

Account Balance Information — Want to know what your account is worth today? Call Participant Services to get market values priced at yesterday's closing prices.

Participation Eligibility — New employees no longer have to wait a year to join the 401(k) Plan. Effective July 1, 1993, permanent employees with 6 months of employment with Temple-Inland are eligible to join the Plan. See your local Human Resources representative for enrollment information. (Note: Eligibility requirements may vary at locations with bargained 401(k) Plans.)

Give Yourself a Loan — You can now borrow up to one-half of the value of your before-tax Plan account. By borrowing from your own Plan account, you avoid having to pay the current income taxes that would otherwise be due on a distribution from your Plan account. And, the interest you pay on your loan is paid back to your own Plan account. Call Participant Services for more details. (Note: Loans are not available through some of the bargained 401(k) Plans.)

New Investment Options — The new selection of investment funds offers a full range of investment opportunities. For more information on the investment options available through the Plan, call Participant Services.

Who are These Guys at Participant Services — The representatives at Participant Services are employees of the Vanguard Group. Vanguard is one of the largest mutual fund management companies in America, and is one of the industry leaders in daily pricing services for 401(k) Plans. Vanguard's Participant Services representatives can help you get the most out of your Temple-Inland 401(k) Plan. They are just a telephone call away.

WHO SHOULD I CALL ABOUT:	CALL:
Enrollment	Temple-Inland
Contribution Changes	Temple-Inland
Update Account Information	Temple-Inland
Plan Enrollment Kit	Temple-Inland
Request a Vanguard Fund Prospectus	Vanguard
Account Information	Vanguard
Transfer Assets Between Investment Funds	Vanguard
Redirect Future Contributions	Vanguard
Investment Information	Vanguard
Retirement Options	Vanguard/Temple-Inland
Request a Loan Application	Vanguard
Request a Distribution Application	Vanguard
Ask Questions About Your Account	Vanguard
Vanguard Participant Services Representatives	*ph. 1-800-523-1188*

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SERVICE ANNIVERSARIES

FIRST & SECOND QUARTER, 1993

Bleached Paperboard

35 years
Aubrey Barlow
D.C. Bass
James Bumstead
Tom Carter
Jim Grissom
Frank McDonald
Joe Nelson
Tom Matthews
Marge Smith
Troyce Taylor
Kenneth Thomas
Don Williams

30 years
Tommy Hancock
Jack Gregory
Gerald Havel
Bob Herbst
Hulen Mahan
Lou Mitchell
John D. Smith

25 years
Kathleen Beard
J.K. Bridges
Tommy Brooks
Jerry Castilaw
Randolph Cleveland
Henry Collier
Virgil Cox
Johelen Crawford
Lewis Crocker
Larry Davenport
Louis Delome
Louis Flower Jr.
George Ferguson
John Garrett
Albert Grissom
Tommy Hartman
Steve Heckard
Benny House
Charles Hudson
Burton Hughes
Harry LeBouff
Jerald Litton
Buzz Lemons Jr.
Curtis McClelland
Bo McGallion
Robert McNeil Jr.
Frank Morgan
Bobby Moore
Butch O'Dell
Kenneth Phillips
Jimmy Powell
Claude Ratcliff Jr.
Sam Ryan
Don K. Smith
Charles Stanley
William Stewart
Leon Stockstill
Rufus Sykes
Ronald Vidrine
Curtis Walters
Billie Weeks
Herman Wise
Avis Woods
David Worsham

20 years
David Brabham
Alton Dabney
Bettye Davis
Charles Gore
Freddy Hartman
Gerald Hooks
E.A. Kimes
Hank Loftin
Darlene Lum
Shirlene McKee
Paula Middlebrook
David Newsum
Robert Skinner
Billy Sumrall
James Turner
Janice Warren
Walter Wright Jr.
Janet Young

15 years
Jim Arntson
Gary Buffington
Billie Chandler
Bobby Clegg Jr.
Jonathan Cox
William Denby
Roger Ingram
Herb Conway
Ben Eppes
Steve Fountain
Russell Gore
Brian Harding
Rex Herrington Jr.
Doris Higgins
Tim LaHaye
Richard Langley
Tim Linney
Gary Paine
John Parigi
Jimmy Parish
David Pattarozzi
Jack Rigsby
James Schee
Jane Sitton
Debra Smith
David Smith
Stanley Smith
Steve Smith
Gary White
David Woodell

10 years
Sheila Armstrong
Dee Hinkie
Brian McDonald
Frank Tompkins

5 years
Scott Briggs
Diane Etue
Vernon Holland
Terry Hallemann
Larry Jacks
Sue Quick
Joe Richardson
Sharon Scott
Mark Williams

Building Products

Buna

5 years
Jerry Andrews
Steven Bendy
Kenny Bolton
John Freeman
Larry Gray
Thomas Harris
Jerry Hodges
Kevin Rose
Artie Shankle
Jimmy Williams

Diboll

30 years
Ginger Capps
James Hunt

25 years
Vera Derryberry
John Scott
Edwin Smith
George Vinson

20 years
Eddie Courtney
Ray Fenley
David Helm
James Hawthorne
Fernando Hernandez
Woody Kirkland
Dennie McKay
J.A. Rodriguez
Alejos Salais
Maria Saucedo
Armando Sepulveda
David Ward
Jimmy Wise
Jose Ybarra

15 years
Sandy Bate
William Carver
Socorro Chavez
Robert Derrow II
Gilberto DeJesus
Michael Helm
Jessie Lewis
Danny Mullins
Arturo Morado Jr.
Jose Perez
Bobby Porter Jr.
Raphael Rodrigues
Jose Torres

10 years
Matthew Amason
Douglas Baldree
Robert Booker
Juan Guerrero
Daniel Hernandez
Elzie Holmes
Marcos Lara
Gilberto Lopez
Larry Lucas
Martin Ortega
Terry Porter
Wynn Russell
Robert Serpas
Rosa Sosa
Leslie Stubblefield
Rodolfo Tamez Jr.
Alton Thompson
Franklin White
Curtis Windsor

5 years
Terry Lynn Barrett
Cesar Bautista
Matthew Brady
Randy Capps
James Fisher
Bryan Jones
Kathi Jordan
Jamie Pittman
Richard Rivers
James Stringer Jr.
Edd Sidney Jr.
Gregory Willcutt

Fletcher

5 years
John Baxter
Vickie Bridges
Thomas Lindley
Rodger Miller
Elizabeth Sanders
Kilbrent Stephenson
Billy Townsend

Monroeville

15 years
Lesley Johnson

10 years
Columbus Blair
Walter Ward Jr.

5 years
Dwight Chandler
Ronald Leljedal

Pineland

35 years
Hershell Phillips

30 years
Calvin Boyer
Lee Hunt
Royce Warr

25 years
Bobbie Garner
Amy Phillips
Van Williams
Willie Williams

20 years
Grover Clark
Billy Dennis Jr.
Walter Fair
Dolores James
Lydia Long
Johnnie Simmons
James Watts Jr.

15 years
Earl Brown
Oliver Marshall
Bill Jones
Walter Matlock Jr.
Billy Wade
Joe Wade

10 years
Glen Clark
Guy Forse Jr.
Jennifer Hardy
James Johnson
George Kampa
James Rozas
John Sparks

5 years
Dennis Austin
David Brewster
James Dupree
Jeffrey Kilgore
Carl Parks
Evelyn Roberts
Willena Stewart

Thomson

15 years
Douglas Robertson
Alphonso Smith

5 years
Ronald Bussell
Reginald Doughty
William Holbrook
Michael Lyons
Ervin Murray
Stephen Smith

West Memphis

20 years
Bobby Henry

15 years
Clifton Beith
Kenneth Boone
Andy Cissell
Ronnie Clark
Stanley Clark
Charles Johnson
Alvin Morris
Jessie Wiley Sr.

10 years
Robert Peterson

5 years
Peter Keenan

Corporate

25 years
Ruth Ruby

15 years
John Dichard
Stacy Lucas
Bruce Owens
Cynthia White
Renee Witherspoon

10 years
Ryan Sorrell

5 years
Lorraine Dorman
Jean East
Shandi Friese
James Leavell
Joan Thomas
Ronald White

Forests

25 years
Darwin Foster
Ed Simmons

20 years
Gerold Hussey Jr.
Karey Lee
John Napier
Tommy Jacks
Don Whitaker

15 years
Vicky Baccus
Terry Barrow
Jerry Dyess

10 years
Tim Cunningham
Joe Hamrick
Mark Simmons
Steve Welch

5 years
Danny Cryer
David Grant
Mike Johnston
Joel Lee
Greg Sieg
Vernon Thompson
Nickie Wall

Free Press

20 years
Betty Jo Jared

Investment Division

35 years
Betty Burkhalter

5 years
Deneice Marshall

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JAY BRITAIN

One of the prettiest times in the forests of Temple-Inland is autumn, when leaves turn different colors. What happens to make trees turn color? As the days grow shorter, and the nights longer, the tree stops sending sap to the leaves. The chlorophyll, which makes trees green, disappears, the sap dries, and the leaves change their colors.

TEMPLE-INLAND
FOREST PRODUCTS CORPORATION
P.O. Drawer N / Diboll, TX 75941 / (409) 829-1430

Address Correction Requested

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