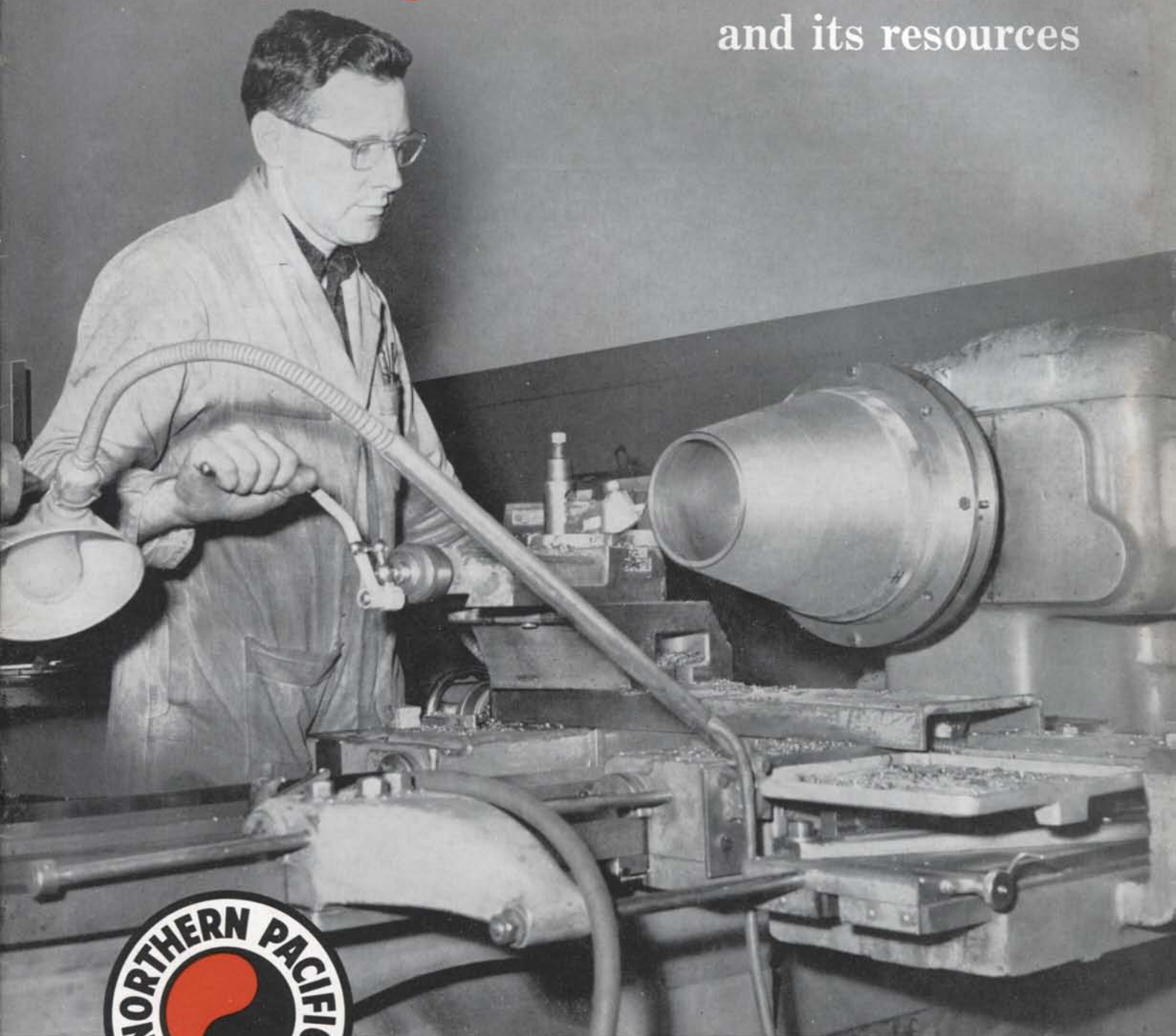


# *The* **NORTHWEST**

and its resources



No. 5

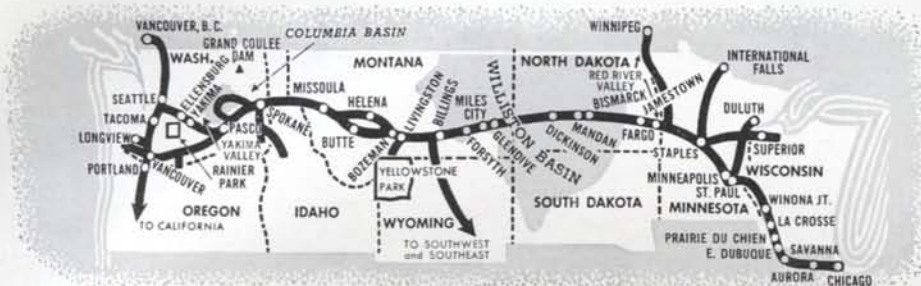
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**SEPTEMBER-OCTOBER, 1964**

*Main Street of the Northwest*





## THE NORTHWEST

*Published Bimonthly by the*

### NORTHERN PACIFIC RAILWAY COMPANY

W. J. HUNT, Editor.....St. Paul, Minn.

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## New Unit Reducing Costs at Central Exchange Refinery



A \$1,300,000 propane deasphalting unit—70 feet high and weighing 160 tons, is now in operation at an oil refinery of the Farmers Union Central exchange in Laurel, Mont., following a 10-month period of construction.

Harry Wagner, at the left in the pic-

ture, director of Central exchange's petroleum division, reported that the new unit will save its original cost many times in the coming years by substantially reducing the supply of refinery-produced residual fuel oil, for which there is less demand, and increasing the

## The Cover Picture

For those who continue to live their lives about as they always have, doing the same old chores to earn their bread



and frequenting familiar haunts, it may come as a shock to visit a factory where bizarre but useful gadgets of the space age are made. Some of us still may not realize that these things no longer exist only in the

dreams of a few select scientists and that they already are commonplace to many modern men. Such was our reaction, a troubled one, we might say, on learning firsthand what occurs in Albany, Ore., where refractory and reactive metals are made and fabricated into products which one day may sit upon the moon. Our cover shows Ted White at the Oregon Metallurgical corporation machining a nozzle (the part where the blast comes out) for a rocket engine.

supply of more marketable gasoline, burner oil and Diesel fuel. With potential savings of more than \$1,300 a day, the installation could recover its cost in approximately three years, Wagner said.

During recent years, Wagner pointed out, the industrial market for residual fuel oil has been steadily shrinking under heavy competition from electricity, L.P. gas, heating oils and Diesel fuels. He indicated that this often has resulted in refineries gearing their operations to the amount of residual fuel oil that could be stored or sold.

Clyde Cromwell, refinery manager, shown with Wagner, explained that the method by which the new unit converts a substantial volume of asphaltic materials produced during the refining process into high-demand gasoline, burner fuel, and Diesel fuel, is similar to the workings of a cream separator—but more complex. Propane chemically combines with certain properties in the asphalt to form a solution, he said. The propane is then separated from the solution and the remaining portion is reprocessed and charged through a catalytic cracking unit ultimately to emerge as gasoline, Diesel oil and burner fuel.



# 12 Acres Are Under Roof Now at Associated Grocers, Inc.

**Three-Phase Program for Food Company Finished at Seattle Included 192,000 More Square Feet, and Extensive Remodeling Was Done, Too, in Old Space; Covered a Three-Year Period**

When Associated Grocers, Inc., at 3301 Norfolk street, in Seattle, completed a 192,000-foot expansion program recently, it had gone through three different phases of modernization and improvement whose beginning had occurred three years earlier.

The big grocery concern, which has 700 employees and is owned by 360 members who operate Thriftway and Serve-U Stores, all of which are independent, also serves other retail markets all across the state of Washington from two locations—one in Yakima and one in Seattle, which is the main distribution center, where the improvements took place. Either center can furnish approximately 85 per cent of the requirements of a retail grocer.

Phase No. 1, completed in April 1961, was begun when the center in Seattle was operating in 320,000 square feet in one building but was, as Lyle D. Keller, division manager, explained, cramped in all departments. When all the work was finished, late in 1963, there were 512,000 square feet under cover, or slightly less than 12 acres of space.

In phase No. 1, 67,000 square feet



**ASSOCIATED GROCERS, INC., HAS space at Seattle, shown inside the white line, on Northern Pacific land, with 512,000 square feet, or about 12 acres, under cover. The railway's main line tracks and industrial spurs are immediately at the rear.**

were added for the health-and-beauty-aids department. From this section a store manager may order such household necessities as tooth paste, aspirin, hair-care items, cosmetics, lawn chairs, certain housewares and, in season, things as varied as Christmas wrapping paper, string and toys.

"The trend toward handling in grocery markets more items and, too, things that didn't even exist 10 years ago, has been tremendous," Division Manager

Keller said, pointing out some of the reasons why distribution centers such as his require more room.

Phase No. 1 included, also, greater elbow room for the company's packaging department and its grocery repackaging. For example, Associated puts up its own dried fruits, split peas and other dry vegetables under a label called Verifine. Also, it has its own brand of candy, which is called Carousel.

New receiving facilities for trucks were included in phase No. 1, too.

In phase No. 2, which was completed in July, 1961, warehousing space for groceries was added totaling 77,000 square feet. This sizable acquisition of area not only gave more room for assembling orders but it furnished a place for more items.

"New articles that we handle today,"

## Improvements at Humble Plant to Cost \$7,000,000

Hydrocracking, said to be one of the newest refining techniques in the oil industry, will occur at the refinery in Billings, Mont., of the Humble Oil & Refining company when installation of a new unit, which will have a capacity for 3,740 barrels daily, is completed in about a year. The unit is the principal part of a \$7,000,000 program involving new construction at the 15-year-old plant, whose daily capacity is 35,000 barrels.



**IN RECENT REMODELING, 67,000 square feet were added to Associated's health-and-beauty-aids department, where numerous items are available, including lawn chairs, toys and Christmas wrappings. In the picture, Carmen Zipp fills an order.**



Keller commented, "are numerous in particular in the different kinds of prepared foods and soaps.

"New names, new packages and more shapes and sizes are on the shelves. And, take toilet and facial tissues as an example. These now run a full gamut of colors intended to satisfy the wishes of housewives."

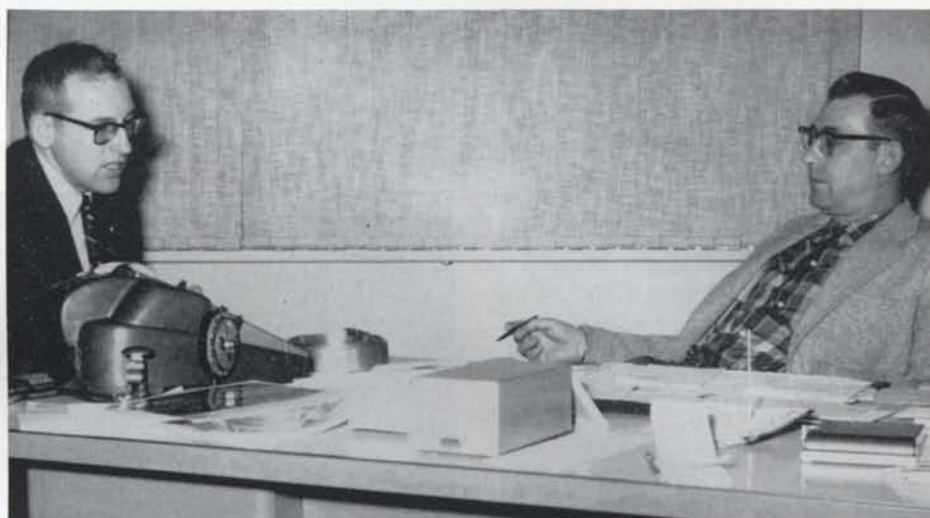
Phase No. 3 of Associated's expansion involved principally refrigerated space, with a total of 47,716 square feet added and 37,553 square feet remodeled in this department.

Some 23,531 square feet used for frozen foods were changed substantially by removing existing partitions and making this department into one large unobstructed room for increased storage capacity and a better facility for assembly of orders. Refrigeration equipment was installed to maintain 10 below zero in this facility.

An addition of 4,420 square feet for ice cream was included in phase No. 3.

A major job was done on fresh meat facilities, with over 14,000 square feet remodeled, which included more refrigeration and lighting, and with 20,329 square feet of new space provided for pork and beef rooms and for a meat grinding room.

In the third and last phase of Associated's expansion, added lunch rooms for employees were included and more covered platform (14,810 more square feet) was provided for loading trucks which go out to stores. Here one of the features is an elevated conveyor from the meat department, which carries orders overhead, above the platform,



**MARKETING AND TRANSPORTATION** were the subjects under discussion when Bill Greer, left, of Batten, Barton, Durstine & Osborn, advertising agency retained by the Northern Pacific Railway, and Lyle D. Keller, division manager for Associated, met in Keller's office recently at the new building of the grocery firm.

and then down to trucks parked for loading.

These are some of the important things it takes, along with labor, capital and management, to run a modern grocery distribution center.

### Four-Saw Scrag Mill Put Up at Polson

Lake View Lumber, Inc., a new firm, is making studs from fir, larch, spruce and lodge pole pine in a four-saw scrag mill which it built at Polson, Mont., on land leased from the Dupuis Brothers Lumber company adjoining the location of a large sawmill owned and operated by the Dupuis family.

Small logs delivered to the Dupuis property but not used by that company are purchased and then sawed in the

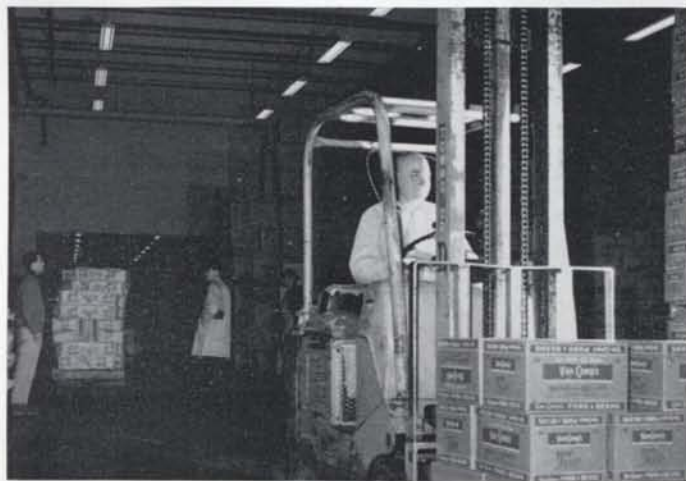
Lake View plant. Others, too, are bought on the open market.

Between 50,000 and 60,000 board feet can be cut in an eight-hour shift.

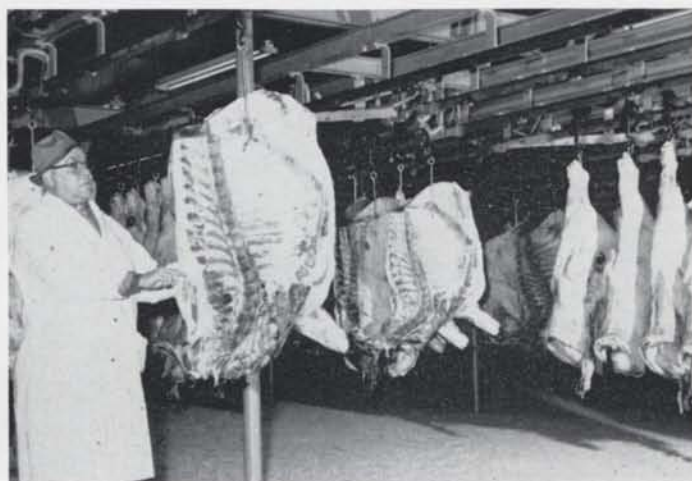
A barker and a chipper were installed. Chips are sold to the Waldorf-Hoerner Paper Products company for its pulp and paper mill, near Missoula.

Rough green studs are sold to the James Lumber company, at Polson, which has a scrag mill of similar capacity and which has a planer, trimmer and equipment for end-branding.

In fact, the following men hold identical offices in Lake View Lumber, Inc., and the James Lumber company: Marshal S. James, at Polson, president and general manager; Rodney Witt, vice president, and Herbert Peschel, secretary-treasurer, both of Whitefish, Mont.



**SECOND PHASE OF REMODELING** at Associated plant in Seattle involved 77,000 more square feet for storage of groceries and for assembling orders. Many items now have been added.



**PORK AND BEEF ROOMS** WERE increased to the extent of 20,329 square feet and, too, 14,000 square feet used for fresh meat were remodeled in the last phase of the modernization.



# Lumber That Was Wasted Is Going into Useful Products

*Material from Planer Mills of Three Firms at Grangeville Is Taken by Manufacturing Company*

Ernest L. Brookshier, a modest gentleman with a lot of native ability and a sense of humor, specializes in making something out of nothing.

His operations for the past four years at Grangeville, in northern Idaho, have been directed toward accomplishing that goal.

Brookshier and eight persons he employs manufacture things from lumber. Materials coming from his factory, usually classified as cut stock, include such varied items as parts for a clothes drying rack, frames and slats for louvers, parts for sashes and doors, heel blocks (pieces of wood from which manufacturers cut heels for women's shoes), surveyor's stakes, parts for bee hives, finger-joint stock and toy stock.

"A carload of finished parts for a clothes drier is worth \$10,000," Brookshier commented, "but before we salvage the material and work on it, the wood is just about worthless.

"Three sawmills are run at Grangeville by the Inland Lumber company, Ida-Pine Mills, Inc., and the Prairie Lumber company. We get our raw material from them and keep 7,000 tons on hand, valued at \$15,000 in our warehouse after it comes from the mills. Before we asked for it it was considered waste, and was burned in teepees to get rid of it.

"We use random lengths of planer-mill ends of Idaho white pine and ponderosa pine designated as six-quarter planer trim and four-quarter planer trim. Some



**RANDOM LENGTHS OF ENDS** from planer mills give Ernest L. Brookshier, at Grangeville, Ida., a motley assortment of pine from which he manufactures cut stock, after the raw material has been sorted and piled up neatly in his warehouse.

are four feet long but many are 24 inches long and others are from 10 to 12 inches. We cut out edges with bark on them and other defects, as we want only clear stock but, at that, 75 per cent of the stuff that comes from the mills is made into something useful."

The ingenuity of this interesting man in making the plant at Grangeville operate with low costs received more emphasis when a reporter was taken on a tour around the place recently.

"See that machine," Brookshier admonished the visitor, pointing to a handmade contraption that didn't seem to an unmechanically inclined reporter to make much sense. "Well," he continued, "I am building it from scrap iron and

parts off a washing machine. When it is finished it automatically will stack small boards. In other words, it will be an automatic stacker."

Then, working in the plant, there is a homemade multiple ripping machine, in which eight adjustable saws can be used. Another one planes and forms square or rectangular pieces on all sides.

When a motor burned out not long ago on a cut off saw that had been remodeled to adapt it to needs in the factory, Brookshier was philosophical.

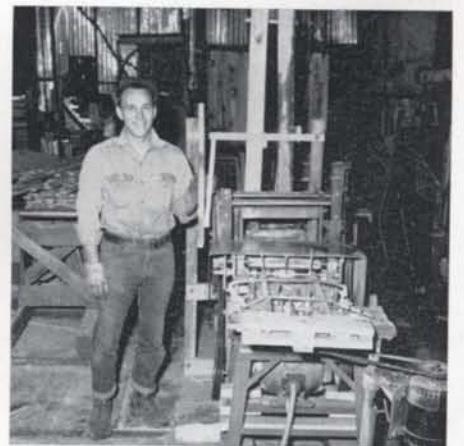
"Don't worry," he told the operator, "the motor has been in use on the saw almost every day for two years and no telling how long it ran a washing machine before that." (Turn to page 6.)



**TAKING OUT KNOTS** and trimming edges, Ernest L. Brookshier, above, gets clear lumber for use in his factory.



**USING THIS HOMEMADE** multiple rip saw, Jean Cash makes frames for louvers in Brookshier factory in Idaho.



**ON A MOLDING MACHINE** made especially for the job, Lester Cash cuts bars for a clothes drier, with leftover wood.



# French-Fried Spud Plant Reopened by Lamb-Weston, Inc.

## Closed Factory at Grand Forks Leased to Western Firm

A factory built at Grand Forks, N. D., by Frozen Potato Products, Inc., and operated between September, 1962, and February, 1963, when it was closed, will be reopened in late September or early October this year by Lamb-Weston, Inc., of Portland, Ore.

On June 1, 1964, the Mid-Continent company of North Dakota, a subsidiary of the Southeastern Public Service company, at Kansas City, purchased the physical assets of Frozen Potato Products, Inc., which consisted of the factory and its equipment, a warehouse for dry storage and a storage house for 166,666 bushels of raw potatoes. Mid-Continent also owns a frozen-storage warehouse 100 x 200 feet which it built just north of the plant late in 1962.

Officers of Lamb-Weston, Inc., announced recently that they had leased the facilities formerly owned by Frozen Potato Products, Inc., and that the production of frozen French-fried potatoes, abandoned by the previous owners, would be resumed.

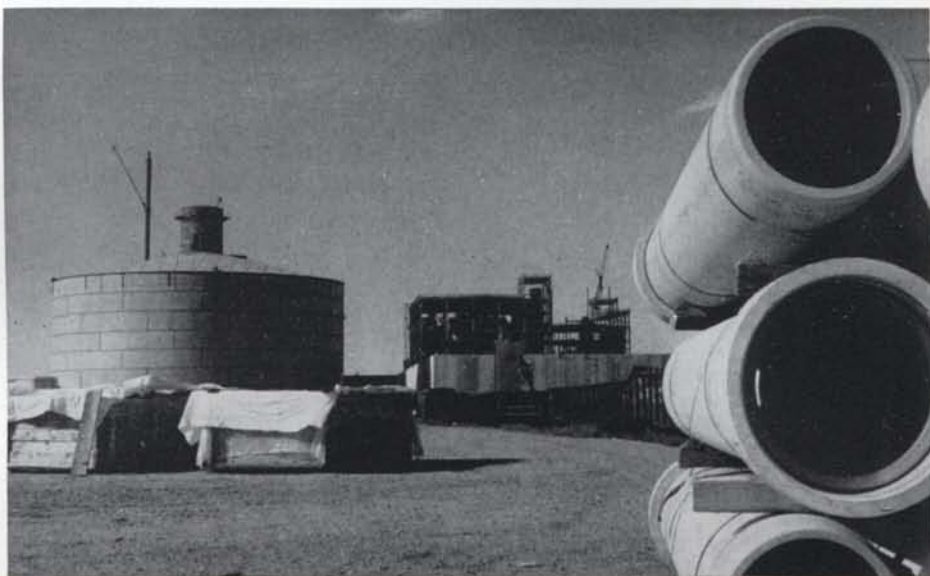
They stated that John French, longtime resident of the valley, had been employed to contact growers to obtain raw material.

L. J. Gore, formerly employed by the Rogers Brothers company at Idaho Falls, Ida., engaged as manager, will operate the plant. On assuming his new post at Grand Forks, Gore stated that from 125 to 150 employees will be required and that almost all of them will be local persons.

His kind of humor came out again when he remarked slyly: "We started here with nothing and we still have it, so we haven't lost anything."

However, Brookshier admitted that he expects to double the present production and that at least two carloads of finished products then will be turned out every month. He pointed out that his products are sold only in carloads and that buyers usually are a long way off.

## Main Building at Drayton Sugar Factory Is Going Up



One of two large circular bulk bins for sugar, each 150 feet in diameter, which had been installed by August 4, last, is seen at the left in the picture above, which was made on that date at Drayton, N. D., where a new beet processing factory is being built by the H. K. Ferguson company, contractor, for the Northern Sugar corporation, a

subsidiary of the American Crystal Sugar company. At the right in the picture the steel frame of the main building was rising at the back of a concrete warehouse. The top of another building, which includes an office, a shop and a storeroom, is in the background, at the center. Beets will be sliced in the new plant in 1965.

Gore commented that officers of his firm believe that the Red River valley has possibilities for more processing.

"It is a wonderful area for growing the crop," he declared, "and it has an advantage in being closer than Idaho to the market."

Gore pointed out that Lamb-Weston, Inc., which freezes and cans vegetables (chiefly green peas) at Weston, Ore., near Pendleton, and which makes frozen French-fried potatoes at American Falls, Ida., already has brokers and its own sales organization.

## Construction Begun on Spokane Valley Project

Construction has been started on the 7,250-acre Spokane Valley project, in Washington and Idaho, east of Spokane, Wash., which will be irrigated entirely with ground water from 31 wells that will be from 116 feet to 265 feet deep, officials of the U. S. Bureau of Reclamation announced. Water for domestic and industrial purposes will be supplied, too, according to the officials.

## Chas. Pfizer Bought Red River Starch Plant

Chas. Pfizer & Co., Inc., chemical and drug firm which has become widely diversified by acquiring other kinds of companies, is operating the Red River Starch company, at Grafton, N. D., which it purchased recently from Paul and George Detweiler, Twin Falls, Ida., who formed the company and built a factory in 1958 and later enlarged it. Robert K. Dodson, general manager, has been retained by Pfizer. The plant uses potatoes to make starch.

## Hardware Company Moved to Larger Quarters

Abandoning a location occupied more than 60 years, owners of the Dakota Hardware company, at Fargo, moved their firm to larger quarters at 212-218 N.P. avenue. Formerly owned by the Minneapolis Moline company, the new headquarters consist of two buildings—one at boxcar-door height. Remodeling has been done inside to accommodate the wholesale hardware firm.



# Rare Metals Made Ready for Space Machines in Oregon

**Companies Located at Albany Refine, Cast, Forge, Roll and Machine Refractory and Reactive Materials for Missiles, Atomic Reactors, Electronic Equipment and Parts in Chemical Plants**

One way to cite an example of the impact of changing times and of space-age scientific discoveries on opportunities for labor and corporate growth is to recite facts, although some of them seem fantastic, relating to what is so far a rather brief commercial history of several refractory and reactive metals—often called rare metals.

A number of companies—a few dozen, anyway—have become primary producers. Some are old companies that manufacture other products, too. Some have come into existence recently.

Two operating at Albany, Ore., the chief ones in the West, are the Oregon Metallurgical corporation, an eight-year-old firm that was started virtually "from scratch," and the Wah Chang corporation, a 42-year-old company whose branch at Albany, one of four it operates in the country, is its largest and newest division, with over 530 workmen, technicians and scientists.

The purpose of these companies is to make and process metals that are strong and light in weight as well as those that resist high temperatures—from 4,000 to 6,000 degrees Fahrenheit—and as a result are applied in machines of advanced design—rockets, rocket engines and jet motors.

And they make metals, too, that shield against radioactivity and resist chemical action and thus are useful in atomic industries and in cases where corrosion



**TWO-OUNCE CRUCIBLE MADE** of zirconium at Albany by Oregon Metallurgical corporation for chemists and valued at \$15 receives an admiring eye from H. Gordon Poole, the firm's technical director, as he shows it to James W. Smith.

of pipes, nozzles, valves and impellers is a great problem.

Founded by Stephen M. Shelton, a former regional director of the U. S. Bureau of Mines, and his associates, who activated a factory with capital derived principally from the sale of stock, the Oregon Metallurgical corporation in a few short years has won fame in a new field and, while it hasn't exactly earned fabulous wealth, its sales force disposed of \$4,649,153 worth of metal and services last year, which showed net earnings of

\$166,977, not bad for a young firm that has cash in the bank and neither short-term nor long-term loans outstanding.

As the name of the company perhaps is a mouthful for some people, employees at the Oregon Metallurgical corporation and, indeed, its officers themselves, for convenience refer to it as OREMET, a designation that is heard frequently in Albany. When you are given an opportunity to take a guided tour through the firm's plant (not many people are) you are surrounded by exotic materials, strange equipment and newly developed methods.

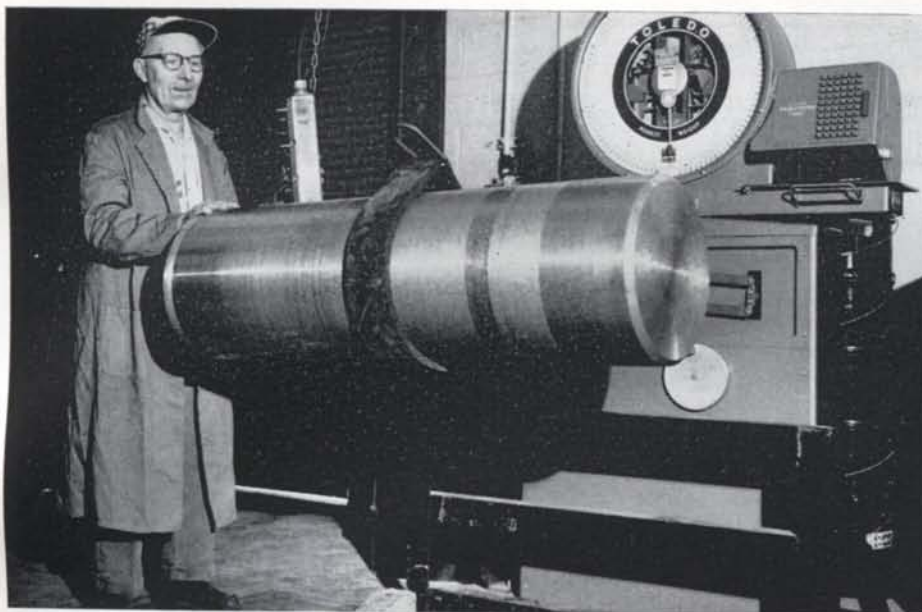
A major part of the company's income is derived from ingots produced by a consumable electrode vacuum melting process and static casting. These ingots, largely titanium in 17-inch diameters, weighing 2,000 pounds each, and in 20-inch diameters, each 3,000 pounds in weight, ranging from five to six feet in length, are ready for direct machining or subsequent working. From two to four ingots are made daily. The plant has five furnaces.

**Buyers of Oremet ingots** convert them principally into structural parts for airplanes and missiles and for jet engines by machining or by making

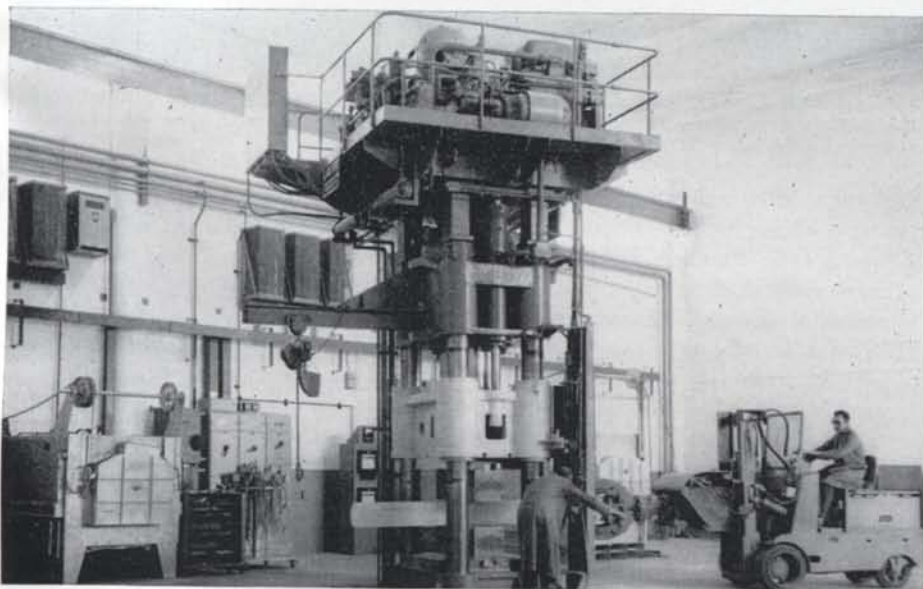


**CARBON ELECTRIC FURNACES**, left, at the Wah Chang corporation, are used in reduction of zirconium and hafnium, both of which occur in imported zircon. Distillation furnaces, right, also are required in refining processes at the plant.

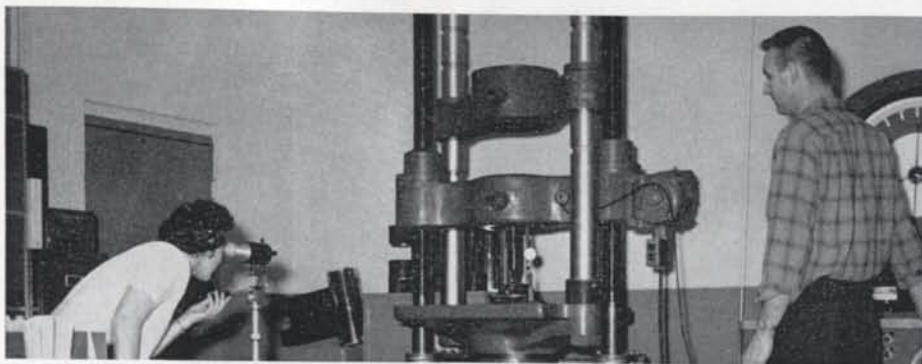




**THIS CYLINDRICAL INGOT**, weighing 3,000 pounds, consists of columbium, a heat-resisting rare metal refined with an electron beam and other facilities in Albany, Ore., by the Wah Chang corporation. It may be applied in space.



**A BILLET OF COLUMBIUM** was shaped in a heavy forging press at the plant of the Wah Chang corporation; in Albany, Ore. Zirconium, hafnium and other rare metals also are produced and forged by the company but they are not machined.



**THOROUGH TESTING AND ANALYTICAL** work are carried on in a laboratory at the Oregon Metallurgical corporation, in Albany, Ore., where, when this picture was made, a bend test was being conducted. A spectograph and an x-ray are used.

forgings. Capsules which orbited the earth carrying astronauts, for example, contained titanium.

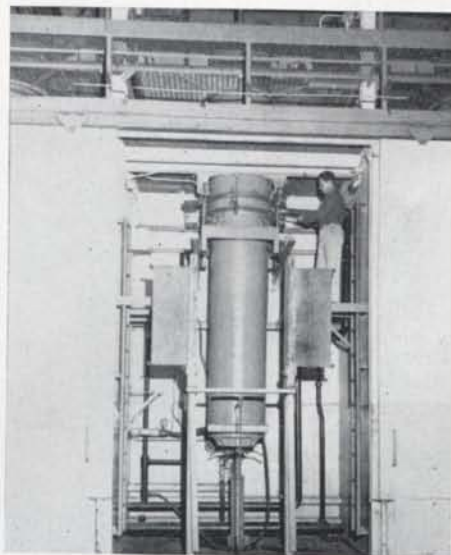
An officer of Oremet said recently: "These titanium materials are lighter than steel but are as strong."

Some ingots turned out by Oremet are pure titanium but many are alloyed, consisting of 90 per cent titanium, six per cent aluminum and four per cent vanadium. Titanium sponge, which is porous refined metal in pure form, is used for melting.

Titanium castings are produced by Oremet at Albany and most of these are for valves and impellers and housings on pumps that are needed in chemical plants, especially where chlorine, which is corrosive, is present. Makers of pulp and paper require equipment of this sort, too. Raw castings are produced which are machined by manufacturers.

## 530 employees at

The Wah Chang (a Chinese expression for great development) corporation's Oregon division in Albany was established in 1956, when the corporation was awarded a two-year contract by the Atomic Energy commission to operate facilities for the production of zirconium located within a research center of the U. S. Bureau of Mines in Albany. Wah Chang began construction of its own production facilities on a 65-acre site north of Albany that same



**IN THIS FURNACE** ingots of titanium are made for customers of the Oregon Metallurgical corporation, called Oremet.



Zirconium crucibles and other products made of that rare metal are manufactured by Oremet. Indeed, crucibles from Albany are popular all over the world with laboratory technicians, who find them highly resistant to acids and other strong chemicals. Zirconium has a place, too, in the form of foil, rod, wire for welding, plate, strip, domes, tubing and forgings, one learns at Albany.

The creation of refractory alloys is an important phase of Oremet's program. These are tungsten-base metals and are either pure tungsten or molybdenum and tungsten. The melting point in these two substances runs from 4,730 degrees Fahrenheit to 6,170 degrees.

Oremet's refractories go into rocket engines and guidance portions of rockets. Castings of fins, or vanes, and nozzles of various sizes are made. Sometimes a blank is cast and at other times the

material is machined in the Oremet factory.

"We have been doing this kind of thing three years," an Oremet officer said. "However, we were frustrated in the beginning because we didn't have anyone who could machine tungsten. It took a year to learn how. The speed of the lathe and the angle of the tungsten-carbide cutting tool that is used are important. These metals are expensive and when we ruin a casting, our costs zoom upward. It may take 500 pounds of metal to complete a 150-pound finished casting."

**Not long ago at Albany** Oremet produced the largest shaped refractory casting known in the world, a nose insert for a rocket, which weighed 143 pounds and was 21 inches high and 10½ inches wide at its base, with a one-and-a-half-inch wall. This unusual metal part was

85 per cent tungsten and 15 per cent molybdenum.

Columbium and tantalum have been used in some of the company's products.

A vane, or jetavator, for a missile shown to visitors in the factory weighed only 24 pounds but was described as worth more than a good second-hand automobile. And a nozzle, so small it could be held in the palm of a hand, for a small rocket cost \$500. The value of metal and the labor involved in this hard-to-make item were responsible.

Thirteen trained persons do testing and analytical work in a well-equipped Oremet laboratory, which includes a spectrographic section. All material is tested with the spectroscope before it goes to furnaces in the plant to determine whether it is contaminated. A development staff works on the formation of new alloys.

## Wah Chang handle exotic ores and strange products

summer. The company is now the city's largest employer.

In addition to the Albany division and the corporate headquarters in New York City, Wah Chang also operates three other divisions. As a whole, the firm produces virtually all the United States' requirements in hafnium, 95 per cent of its columbium, 25 per cent of its tungsten, 20 per cent of its tantalum, 20 per cent of its zirconium, approximately 15 per cent of its molybdenum and 15 per cent of the nation's need in tin. The Albany plant is the firm's sole producer of zirconium, hafnium, tantalum and columbium.

Production facilities of the division at Albany include individual plants for carbiding, liquid-liquid chemical extraction, zirconium and hafnium reduction, powder metallurgy production, consumable electrode vacuum arc and electron beam melting, machining, tantalum and columbium production and a rolling mill, in addition to having maintenance and warehousing facilities.

The plant operates laboratories for research and development, x-ray defraction, spectroscopic analysis, chemical analysis, corrosion testing, physical metallurgy testing and metallographic evaluation.

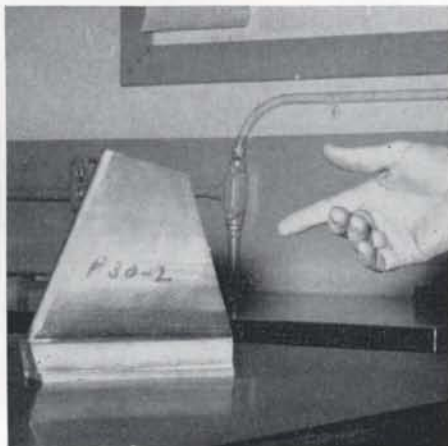
With these operations, it has been said that the division can supply columbium and tantalum at the rate of 25,000 pounds per month, zirconium and hafnium combined at the rate of 70,000 pounds per month and tungsten and molybdenum alloys at a rate of from 30,000 to 50,000 pounds per month.

Raw materials for the Albany facility are shipped in from several parts of the world.

The materials made by Wah Chang are used primarily for producing atomic energy and for space machines. Columbium, for instance, is described as important today because it resists certain



A JAR FILLED with zirconium sponge is held by D. S. Fairgrieve, sales manager, Wah Chang corporation, at Albany, Ore.



WORTH MORE THAN a good used car, this 24-pound vane for a missile, was made from rare metal at Oremet plant.



FROM HAFNIUM STRIPS made at Wah Chang, in Albany, Ore., rods are fashioned which control atomic reaction.

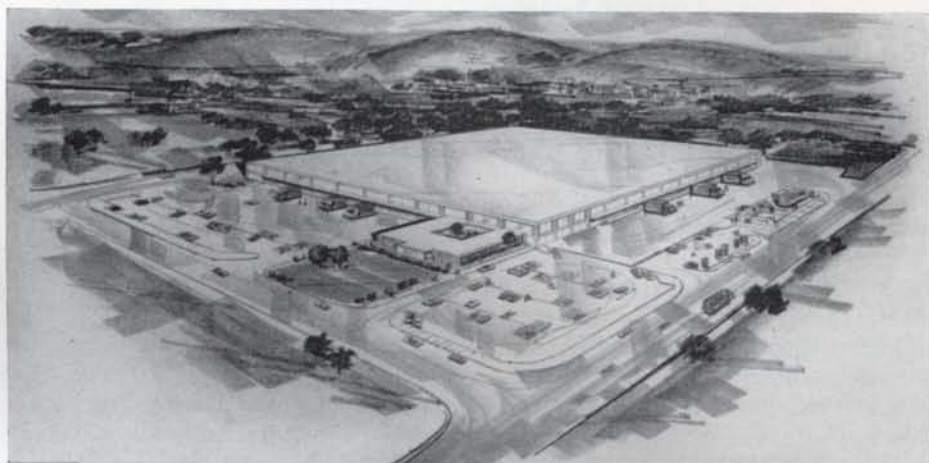


types of chemical corrosion at temperatures up to 1,700 degrees Fahrenheit and has higher strengths than any of the other super alloys at elevated temperatures where oxidation from gases of the atmosphere is a problem. It has wide use in missiles, rockets and components of reactor cores. Hafnium and zirconium are used extensively in atomic reactor applications. Since zirconium is one of the few metals that does not impede the flow of neutrons during atomic reactions, it consequently is ideal as an atomic fuel cladding material.

Hafnium is useful in atomic reactors for exactly the opposite reasons. It has the facility to absorb neutrons and, as a result, rods made of hafnium are inserted into reactors to control atomic activity, slow it down or allow it to be increased. Tungsten, tantalum and molybdenum are multi-purpose high-temperature materials used for applications ranging from metal cutting tools to rocket nozzles and parts. As one engineer remarked, it is almost impossible to think of designing a missile, rocket or nuclear reactor today without several of these refractory metals being used.

Most of the products produced in Albany are extracted from basic ore and processed into metal of high purity, ready for final fabrication. For instance, zirconium and hafnium both are obtained from zircon sand, which is imported from Australia. This sand is first carbidized, then chlorinated in a high temperature furnace to form a crude tetra-chloride. The chloride is dissolved in acids and processed through a chemical extraction plant to separate the zirconium and hafnium from each other. The oxides obtained are again chlorinated to form a pure zirconium or hafnium chloride which is reduced to basic metal using magnesium as a reducing agent in high temperature vacuum reduction furnaces. This material is then processed through distillation furnaces to remove the magnesium, leaving a basic metal sponge. The sponge is crushed, blended according to contract specifications, compacted in a 2,000-ton press and melted into ingots weighing up to 3,000 pounds by using consumable electrode vacuum arc melting furnaces. These ingots are machined and processed through the rolling mill by forging and then hot and cold rolling.

## Construction This Fall Scheduled for Tradewell Stores



Plans of a warehouse and general office for Tradewell Stores, Inc., to be constructed on about 10 acres leased at Kent, Wash., from the Northern Pacific Railway, in the carrier's Norpac Industrial district, were submitted to contractors on August 1 for estimates of costs. It was expected that bids for the work would be opened on September 1. Con-

struction probably will be started September 15. While this is later than anticipated, it is believed that occupancy of the new premises may occur by early spring. A photograph of an architect's sketch of the main building, with an office and parking areas in front and at one side, is shown above. The Northern Pacific main line is at the rear, left.

Columbium and tantalum produced at Albany are made to extremely close specifications. For these metals, the plant starts with the raw columbite ore, first separating the columbium and tantalum by chemical extraction and reducing the oxides to metal by a specialized reduction technique. The metal powder is pressed into electrodes, and then electron beam melted into ingots for added purification. These ingots are further processed through the rolling mill for fabrication into foil, sheet, rod, wire and bar.

The tungsten and molybdenum metals are not produced from raw ore at Albany, but are processed from powder furnished from a Wah Chang plant at Glen Cove, N.Y. However, for specialized application, they are reduced further at Albany where the metal powders are compacted by hydrostatic pressure in a modified 16-inch naval gun or in a 2,000-ton hydraulic press. These compacts are sintered at various temperatures to achieve required density for a particular application, such as spinning, forming, infiltration and stamping of normal production items. The Albany facility can produce consumable arc melted molybdenum and tungsten ingots.

In general, the Wah Chang corporation does not fabricate finished parts in Albany. When necessary, however, it subcontracts this type of work to other specialized companies in the area. Included in these are the Oregon Metallurgical corporation, Rem Incorporated and Northwest Industries. With these specialized industries located in the region, it can be understood why Albany has become known as a leading center for the production of refractory metals.

## \$7,500,000 More Being Invested at Wallula

Construction has been started for the Boise Cascade corporation on a \$7,500,000 pulp and paper mill at Wallula, Wash.

The new plant, being put up adjacent to the firm's kraft pulp and paperboard mill already operating at Wallula, will make corrugated medium, which is the fluted portion of corrugated shipping containers, for the company's 17 plants which produce that kind of boxes.

Expected to be running sometime in 1965, it will add 125 tons per day to the total production of Boise Cascade at that location.



# Room for More Firms on N. P. Industrial Site at Missoula

**Eight and One-Half Acres Are Open Adjacent to Roscoe Steel & Culvert Company**

The Roscoe Steel & Culvert company, whose headquarters are in Billings, Mont., recently made important changes at its branch at Missoula, in the western part of the state.

While the division at Missoula formerly served only as a distributor, it now, in addition, is fabricating products.

Also the company moved to a tract of almost two acres leased from the Northern Pacific Railway in the railroad's 11.89-acre industrial tract in South Missoula, near its Bitter Root branch line.

The Roscoe company, which makes corrugated pipe for highway installations, irrigation projects and water wells, put up a steel building 40x60 feet, with an office in a separate two-room building, at the new location bordering a 335-foot industrial track built to serve the plant.

A gantry capable of lifting two tons unloads sheets of corrugated steel and aluminum from covered gondolas and places the material on a concrete platform, near a forming roller in the factory, where it is made into circular shapes, or "cans." These "cans," each three feet long, are riveted on a power-operated punching and riveting machine to produce culverts about any length a customer wishes. Pipe varying from eight inches to 120 inches in diameter can be made. Arched highway pipe is available, although the arching is done at Billings. Perforated casing for wells is manufactured at Missoula, up to 120 inches in diameter. Gates 12 inches and larger are made for soil-saving reservoirs and for farm irrigation systems.

Curtis G. Hesler, manager at Missoula, is assisted by a crew of a dozen persons. William P. Roscoe, Jr., at Billings, is president.

One other tenant is occupying space on the Northern Pacific's industrial tract. This is the M & S Ready Mix company, which is leasing approximately an acre and a half. The firm is receiving cement and is loading and shipping sand and gravel at this location.

The railway company acquired the industrial tract in South Missoula in March, 1962, by purchase from the



ON TWO ACRES LEASED from the Northern Pacific the Roscoe Steel & Culvert company built a factory in which corrugated pipe from eight inches to 120 inches in diameter is made. Casing for wells also is made by the Roscoe firm.



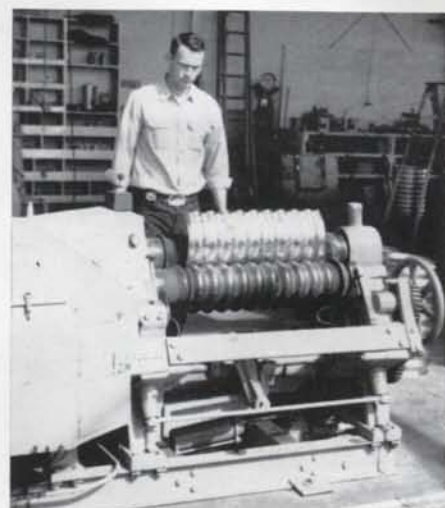
ADJUSTABLE STEEL GATES made at Missoula are like the one held above by C. G. Hesler, local manager for Roscoe.

Intermountain Lumber company. Slightly more than eight and a half acres are vacant and can be leased to prospective tenants.

## Aluminum Firms Made 616,690 Tons of Metal

Five aluminum-making companies operating in Northwest states—the Aluminum Company of America, Anaconda Aluminum company, Harvey Aluminum, Kaiser Aluminum and Chemical corporation and the Reynolds Metals Products company—produced 616,690 ingot tons of the metal in plants in the area last year and of that total some 257,000 tons were processed beyond the ingot stage.

INDUSTRIES WHICH DO not require extensive areas, can be accommodated on the land shaded on the sketch shown.



THREE-FOOT LENGTHS of corrugated steel on a forming machine at Roscoe factory are pressed into circular shapes.





## 1964 Construction Adds Space for Potatoes at East Grand Forks

Merlyn E. Abel, doing business as E. H. Abel & Son, built a warehouse to sort and ship Kennebec and Cobbler potatoes at East Grand Forks, Minn., on Northern Pacific industrial land, in the north-eastern portion of the city.

An N. P. spur is being extended 400 feet to serve the building. Abel loads cars destined to chipping factories in many parts of the United States.

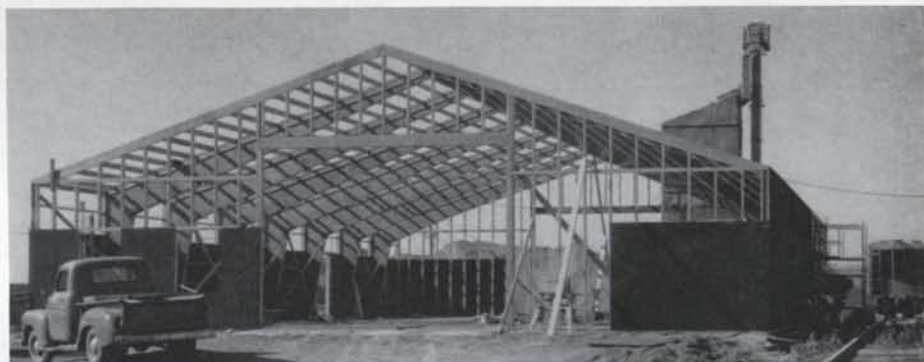
The warehouse, 60 x 96, replaced one formerly located at Seventh street and 10th avenue, in East Grand Forks, which was razed to make way for U. S. highway No. 2 when it was relocated recently in the area.

Abel grows potatoes in the Red River valley, both in North Dakota and in Minnesota. Also he sorts and ships potatoes for other farmers.

Walls and the roof of the new building are insulated, a requirement resulting from the fact that during the winter he will store seed for his own use.

An office and a laboratory were built into a corner of the warehouse.

"We make frying tests on samples from different lots of potatoes," Abel said when asked the purpose of the laboratory, "to determine their quality as chippers. Also, we take readings on specific gravity. We want a high gravity, since with such a reading more chips per 100 pounds of potatoes can be obtained. With a low specific gravity, the chips are just as good, but there are fewer of them.



**CHIPPING POTATOES WILL BE** sorted in a new warehouse, shown while being built, at East Grand Forks, Minn., by Merlyn E. Abel, who ships carloads of Kennebecs and Cobblers to many parts of the United States to chip factories.

Gerald C. Ryan and Thomas W. Ryan, owners of the Ryan Potato company, recently put on their third addition at their storage warehouse at East Grand Forks. Made of steel and concrete, the new structure, at the southeast corner of the Ryan warehouse, is 97 x 100 and, with room for some 90,000 bushels, it brings total capacity to about 850,000 bushels.

The first construction at the location occurred in 1961 and this was followed prior to the recent enlargement by additions in 1962 and 1963.

These improvements all will be ready to use in handling the 1964 crop of potatoes.

### Putting \$12,000,000 into Expansion of Mill

The West Tacoma Newsprint company will spend \$12,000,000 on modernization of its mill at Steilacoom, Wash.



**TELLING N. P. AGENT H. O. Spitsberg,** left, about insulation in warehouse is Merlyn E. Abel, a grower of potatoes.

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## THE NORTHERN PACIFIC RAILWAY

ST. PAUL, MINNESOTA 55101