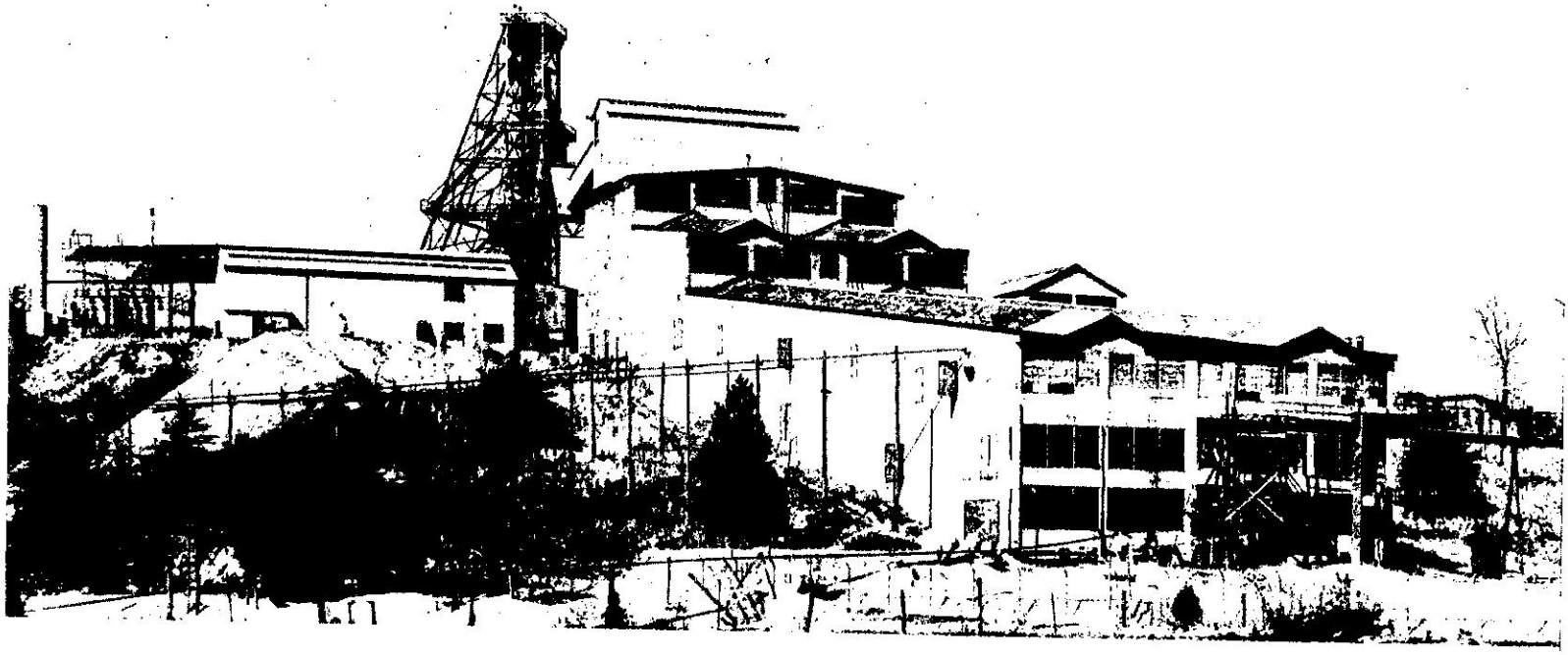
AUSTINVILLE

PEOPLE
JOBS
OPERATIONS



This is Austinville

This is a story of people, jobs and operations at the Austinville mine of The New Jersey Zinc Company. It is also a story of the production of basic raw materials for many products of American industry.

Here in Austinville 650 employes are engaged in the production of zinc and lead concentrates. Austinville's zinc concentrates are shipped to the Company's smelting plant at Palmerton, Pennsylvania, where they are converted into zinc metals and pigments. A portion of our lead concentrates goes to Palmerton for use in lead-containing zinc pigments, and the remainder is shipped to outside smelters.

The following pages contain a visual report of a typical day at the Austinville operation. It is intended to show the relationship of our individual jobs to the efficient operation of the plant, and to the progress of the Company of which we are a part.

We hope you will find the story an interesting one.

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THE NEW JERSEY ZINC COMPANY

Austinville, Virginia

Pictures on the opposite page show —

The upper plant — The mill and the mine headframe . . .

The lower plant — Large building in center is the office.

OUR JOB

-TO PRODUCE ZINC FOR AMERICAN INDUSTRY

- To drill and blast the ore, transport and deliver it to the mill.
- To crush and screen the ore, grind it, and, by the flotation process concentrate it for smelting.
- To design, build, install and keep in repair the equipment we need.
- To transmit and apply steam and electric power to run the equipment.
- To work on the development of new processes.
- To keep the various departments supplied with the equipment, materials and supplies which are required.
- To keep the records.
- To look after the health and safety of all employes.
- To plan and supervise and bring all of these groups together as a team.

All play an important part in producing ZINC for American industry

The MINE

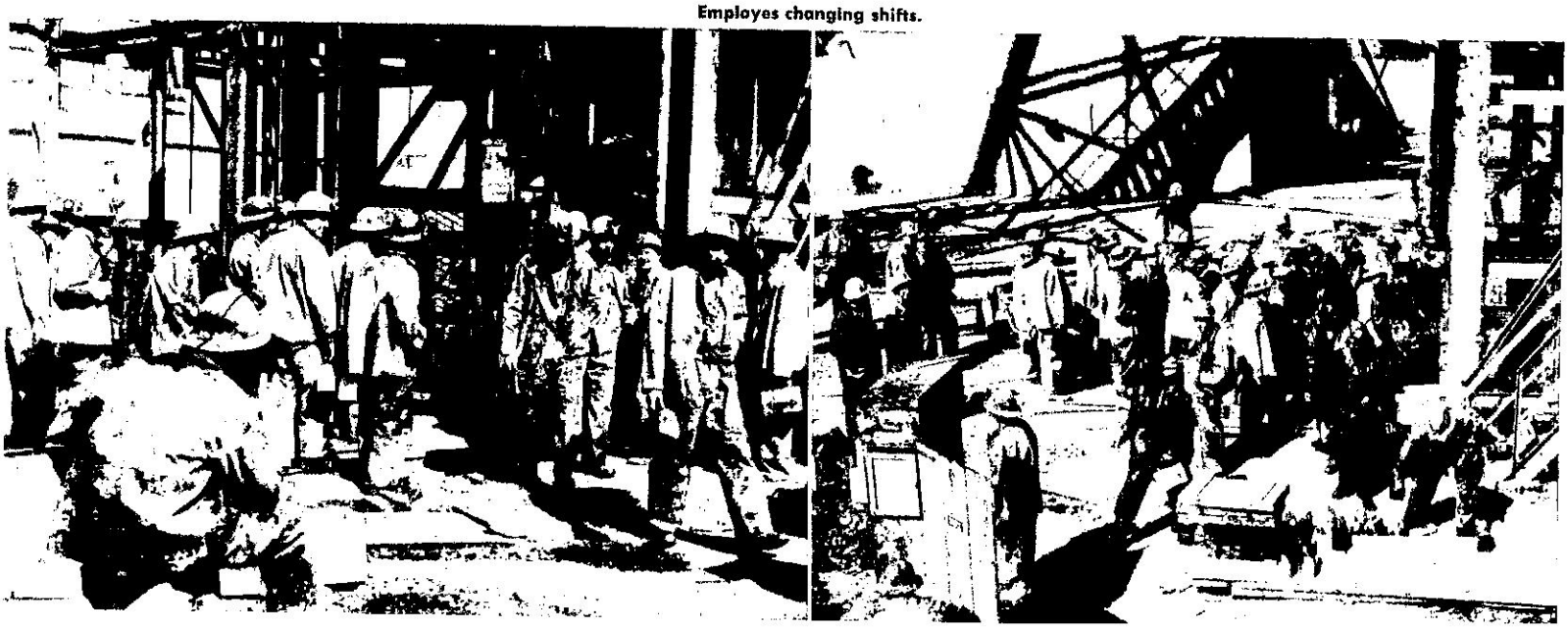
The Mine Department is responsible for the drilling, blasting, loading, haulage and hoisting of ore. The ore is drilled and blasted in underground stopes, passed through grizzlies and loading chutes into mine cars. Ore trains are hauled to the shaft with electric locomotives where the ore is dumped into a common ore pass. The ore is then crushed to a minus four inch size and hoisted to the surface where it begins its journey through the mill.

This department also is charged with the responsibility of mapping and developing present and new orebodies. To accomplish this the cooperation of the Engineering Division and the Geology Department is required.

Still further, it is necessary to maintain present equipment and in many cases construct new equipment. These tasks require the cooperation of the various divisions of the plant.

Throughout all these operations the entire personnel are constantly striving to make the mine a safe, clean place in which to work.

Employes changing shifts.

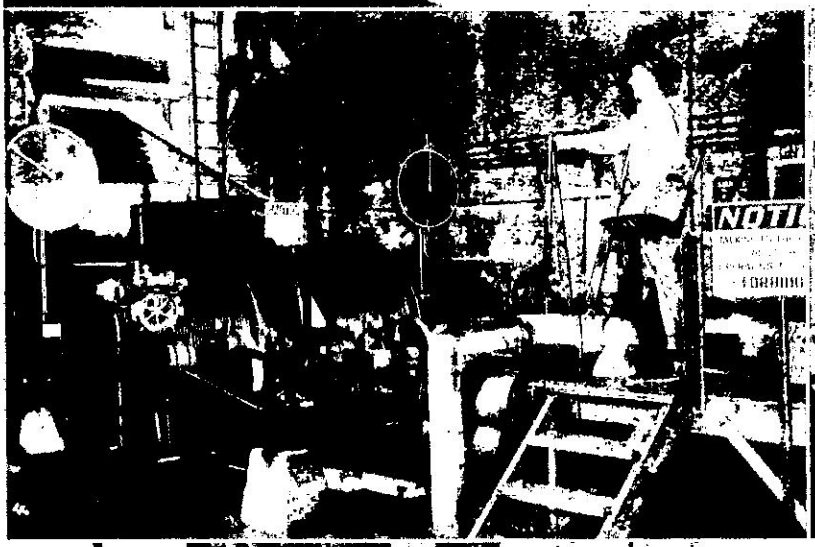


Waiting to go on shift.

Dock Crouse and Norment P. Hudson operating a two-drill jib in a drift.

Waiting to go on shift.

Arthur L. Groseclose and Clifford Q. Eversole operating a column drill in an underground stope.



Louis C. Myers operating the man hoist.

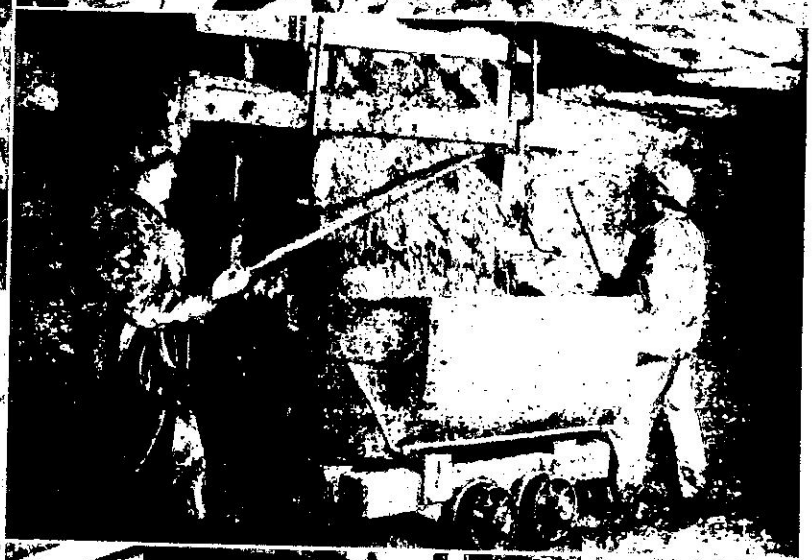
Herman L. Jackson keeps the records.

Harold M. Sutphin, Thomas L. Mabry, Samuel F. Bise, Garfield Lawson, William Warf, Elmer C. Shockley, Lester A. Alexander and Steve Dunford drilling a sinking round in a shaft.

Roscoe R. Lintecum and Marco A. Grubb operating a stoper.

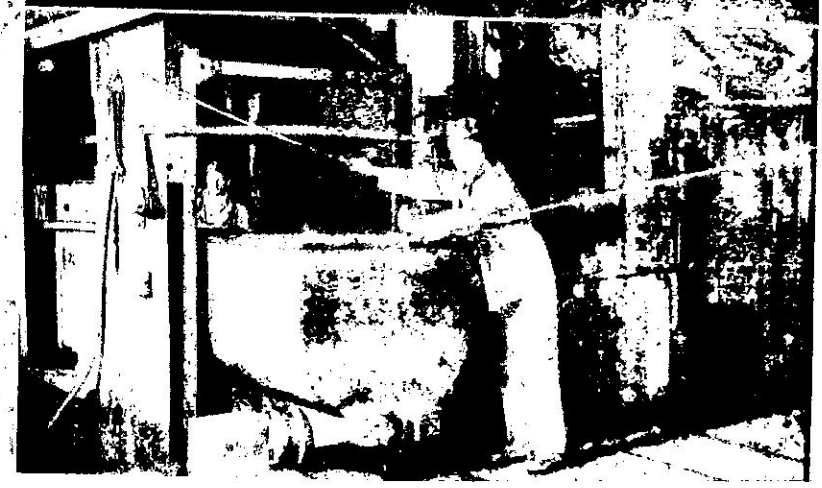
Roy L. Lawson and Robert Whitt preparing blasting fuse at the underground powder station.

Tasie Virs signaling directions for removal of broken ore from a stope.



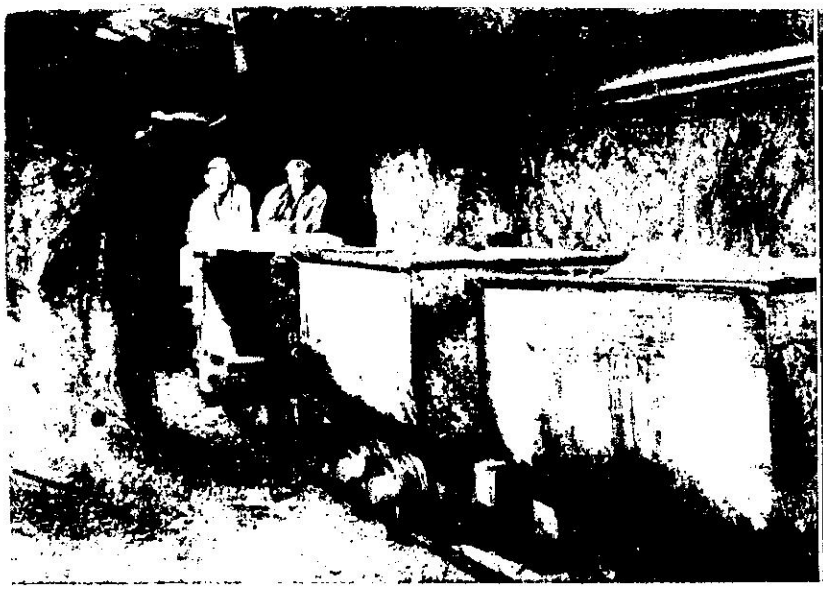
Hansel Akers and Marvin D. Atkins operating a column drill in a sub-drift heading.

Ransom A. Alley and Lee V. Alley loading ore from a stope chute.



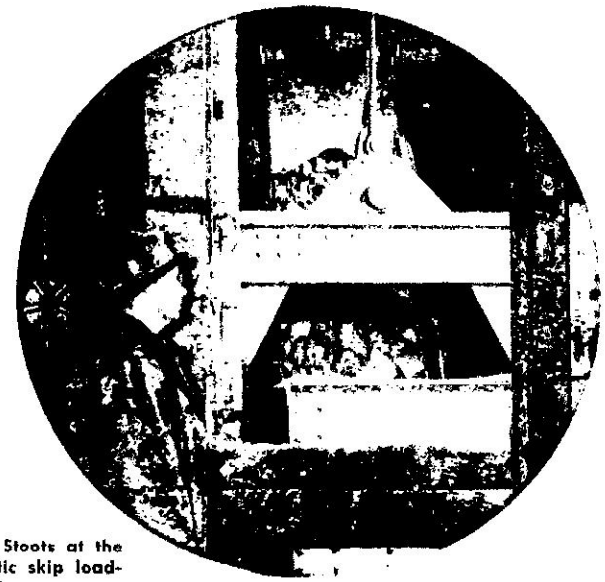
Virgil L. Manuel and Cecil M. Ogle operating a mechanical shovel loader while loading broken rock in a drift.

John C. Davis and Charles B. Shockley removing a car of ore from the cage at the collar of the underground shaft.



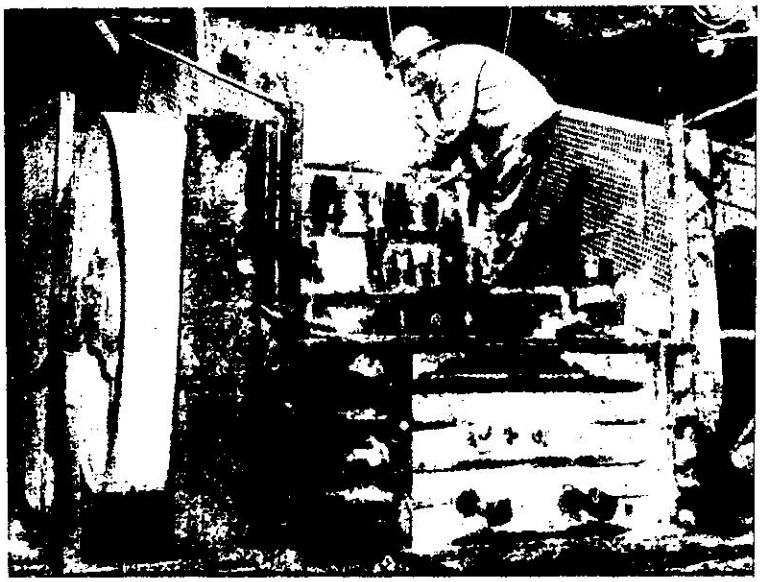
William D. Turney and Ellis W. Vaughan tramming cars of ore to the ore pocket.

William Walter Alley and William M. Blankenship (in rear) operating a car dumper.

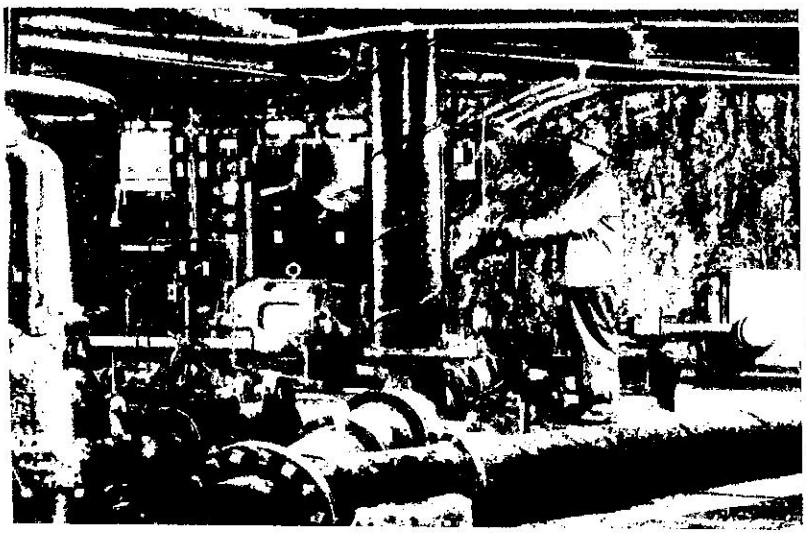


Fred L. Stoots at the automatic skip loading station.

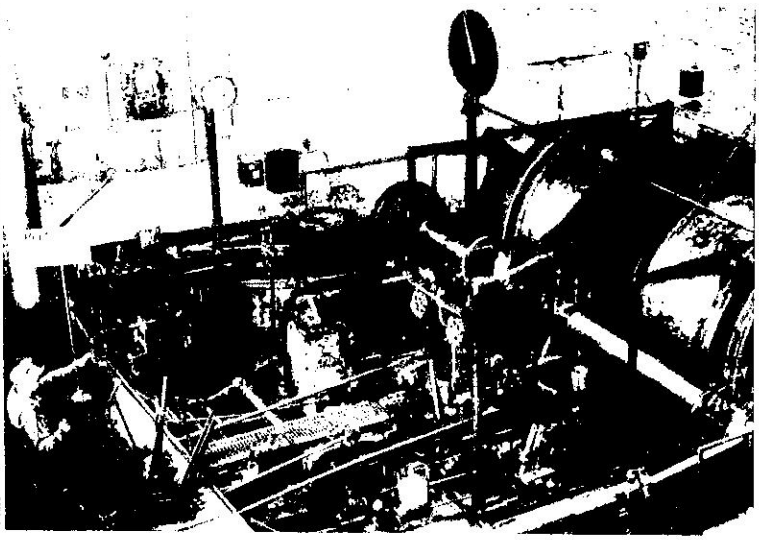
William Blankenship greasing the underground crusher.



Friel Eversole at the pumping station.



Roosevelt Mabe operating the ore hoist.



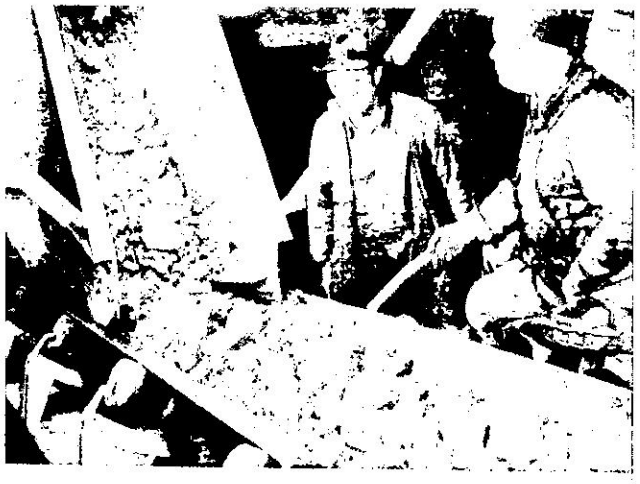
The MILL

The ore after being mined must be further broken down so that the zinc and lead minerals can be separated from the limestone gangue.

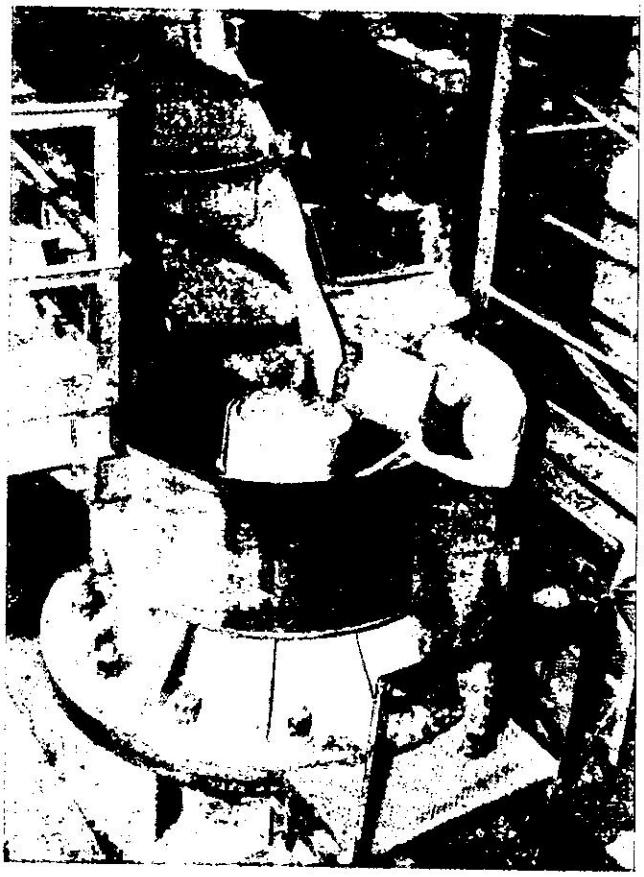
After crushing and grinding, lead and zinc concentrates are separated from the limestone by a flotation process.

Ore comes from the mine as lumps four inches and smaller in size. It is crushed in two stages to minus one-half inch, pulped with water and ground in rod mills to a particle size smaller than one-sixty-fourth of an inch. This process releases the scattered grains of zinc, lead and limestone from each other.

Small quantities of reagents are mixed with the pulped ore and air is blown up through this pulp to produce a froth to which the lead particles adhere. This procedure is repeated with a different reagent combination to collect the zinc. After these lead and zinc-bearing froths are dewatered and dried, they are shipped as concentrates to the smelting plants for processing into metals or pigments. The limestone tailings are pumped to impounding dams.

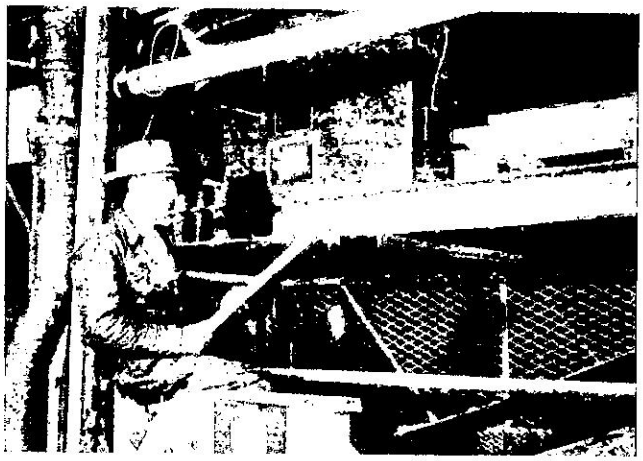


Robert V. Lawson and Bralley M. Winesett sort stray pieces of wood and metal from ore enroute to the mill.



Lawrence P. England prevents a choke-up in a crusher.

Bowie C. Goodman records feed tonnage readings.



The MILL (continued)

Ranzie L. Frazier adjusts the water feed to a mill.

Asa Webb cleans a chute to a crusher.

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Garnett J. Sisk and Charles A. Austin lubricating a classifier.

Luther Jones and Fred Brown inspect zinc-bearing froth.

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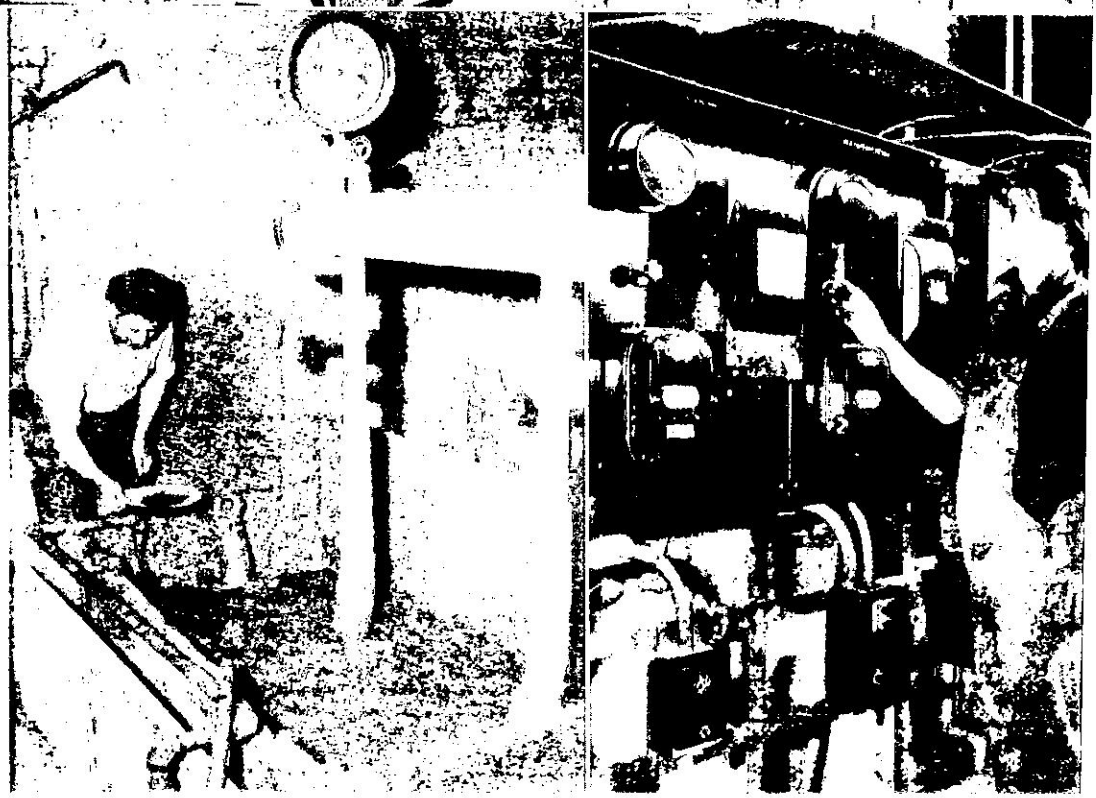
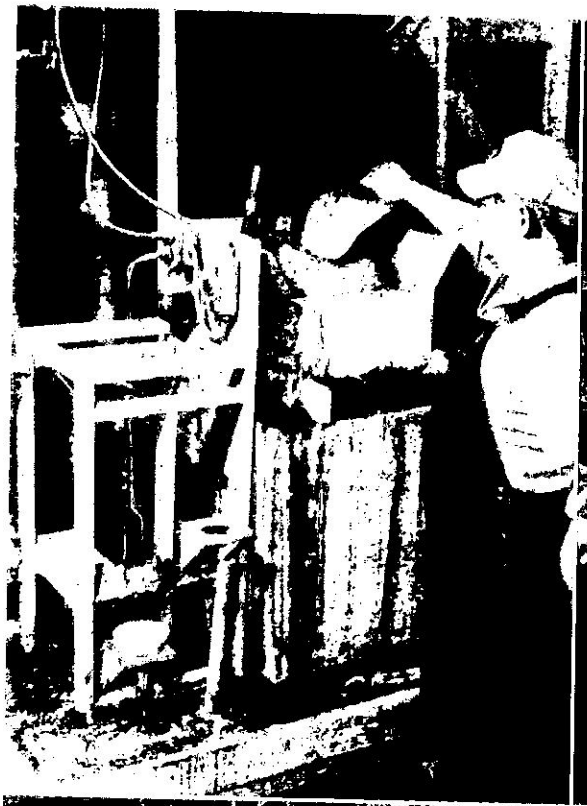
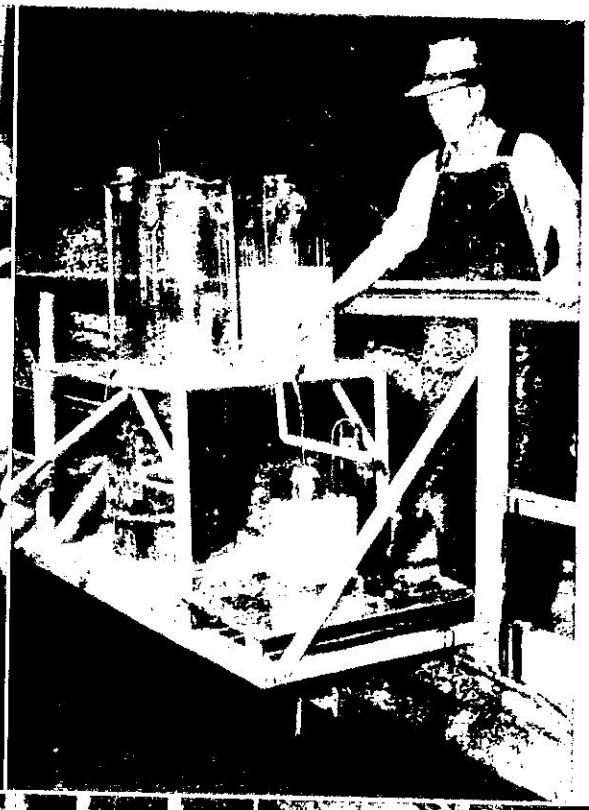
Fred B. Alley inspects the grade of lead concentrates.

Roy Fields checks pump motor power.







Archie Davidson fills a reagent feeder.

James T. Burnett regulates a reagent feeder.

•

Walter S. Stuart makes screen tests on zinc concentrates.

James F. Ingo oils an air compressor.

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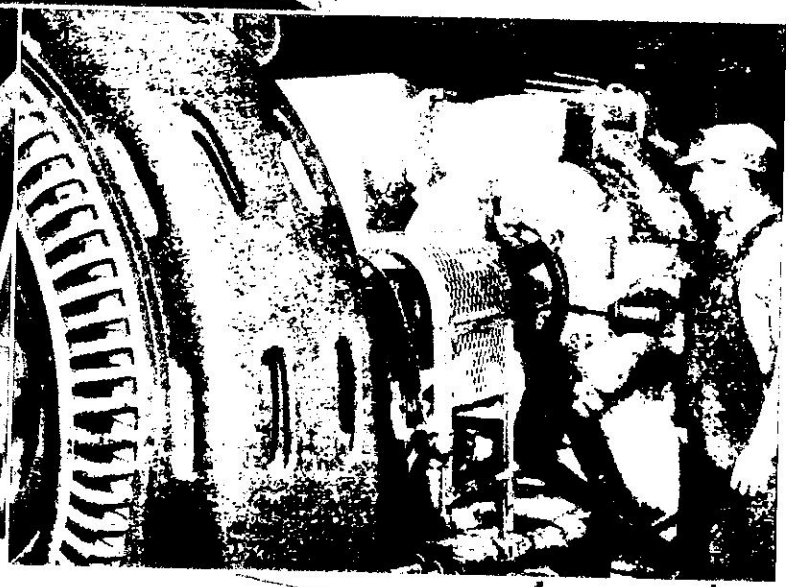
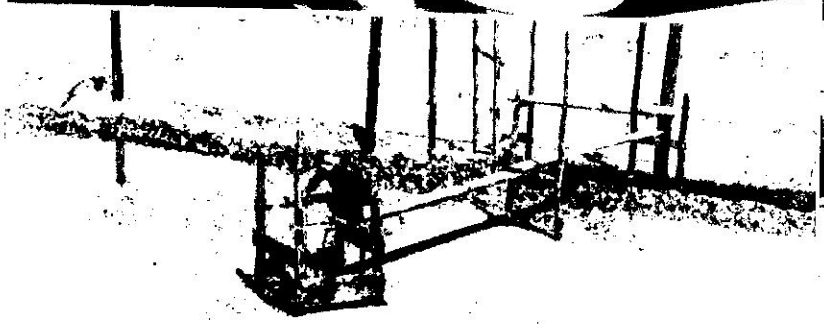
Richard Knuckalls raises a lead storage dam overflow weir.

Deward M. Rose works on the tailings dam.

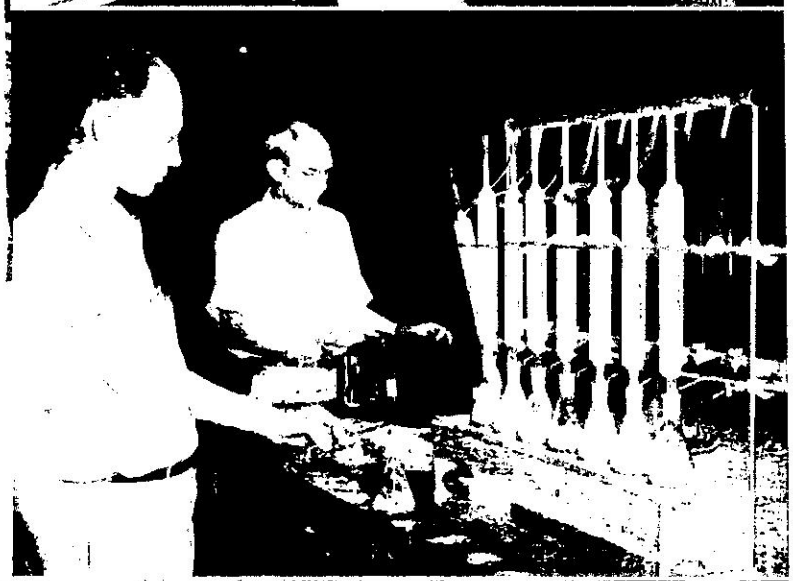




The MILL (continued)

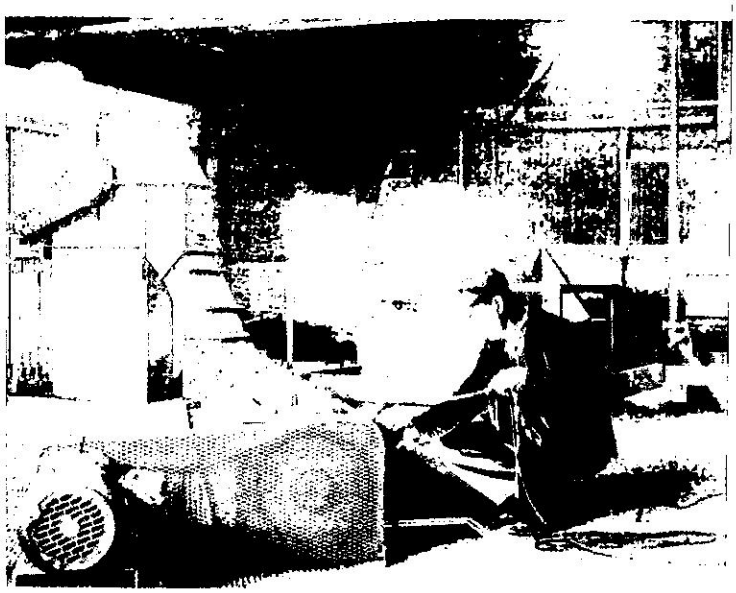
Raymond Fisher determining lead content of ore. Orville Austin, laboratory helper, at the right.

William Loyd Shrader and Roy Bell make chemical analyses.



Lindsey S. Dean calculates mill production.

Malen C. Patterson checks dry ore storage tank.



George T. Dickens cleans the chute from a filter.

POWER and SHOPS DIVISION

This Division is responsible for the furnishing of the utilities required for the operation and maintenance of the plant and its equipment.

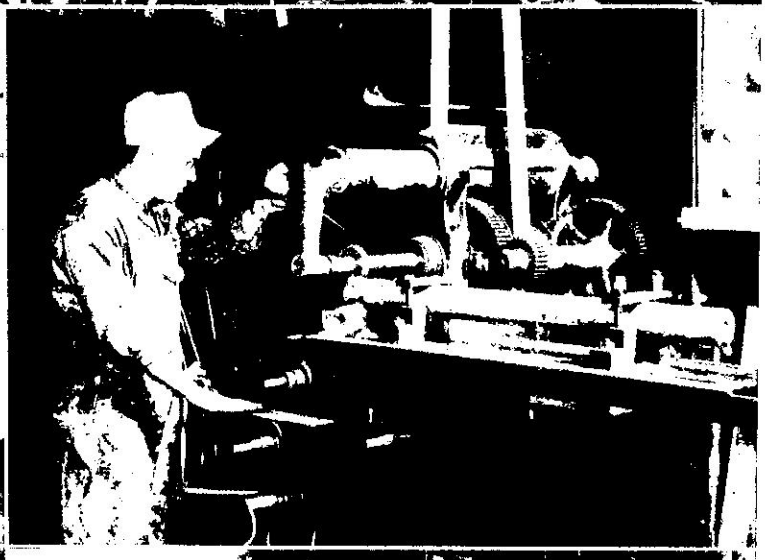
Steam is generated for the operation of hoists, and for heat and other plant uses. Compressed air is furnished to the mine, mill and shops. In addition, electrical power is furnished throughout the plant.

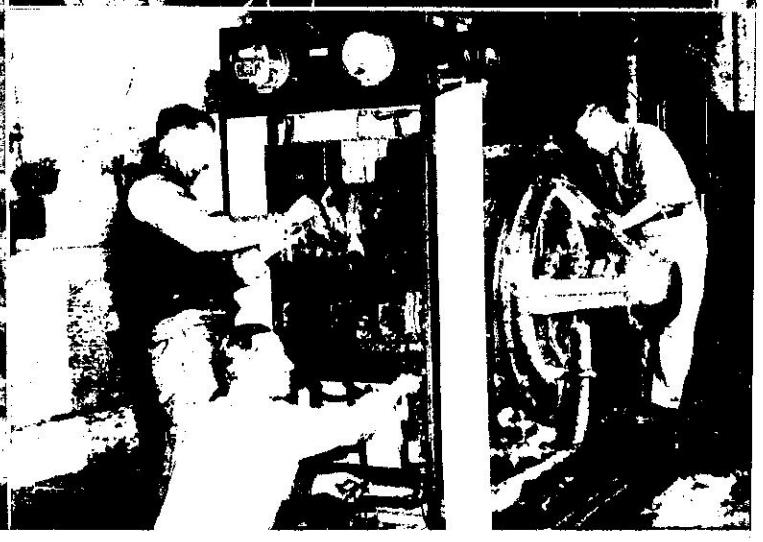
In order to maintain the plant and its equipment, the machine, electric and blacksmith shops are equipped with the necessary tools and staffed with skilled personnel.

Electric Shop group: Standing: A. L. Alford, S. F. Arnold, C. C. Stoots, Walter Arnold, L. M. King and M. R. Arnold. Seated: F. D. Black, L. B. Mabry, C. R. Poole, A. D. Dickens and C. E. Poole.

Blacksmith Shop group: Standing: Guy Jones, W. M. Lovell, C. C. Thacker, Sr., Heath Stone, Tom Lawson, R. T. Frazier. Seated: Preston Gravely, C. C. Moore, W. B. Fulford, R. A. Carpenter and J. S. Fulford.

Machine Shop group: Top Row: S. P. Davidson, S. W. Smythers, John McRoberts, K. V. Lawson, J. W. Archer, H. E. Thompson, W. T. Dean, H. B. Childress. Middle Row: G. W. McGee, R. T. Porter, H. C. Akers, R. G. Edmonds, H. C. Grubb, B. E. Burnett, F. T. Jones, J. R. Rankin. Bottom Row: S. L. Edmonds, R. E. Porter, W. F. Stoots, R. L. Davidson, J. F. Edmonds and K. W. Melton.





Telford L. Rudy, G. French Jackson and G. Malcolm Jackson lubricating and servicing bulldozer.

Howard C. Akers, Garnett W. McGee and Burton E. Burnett overhauling gyratory crusher.

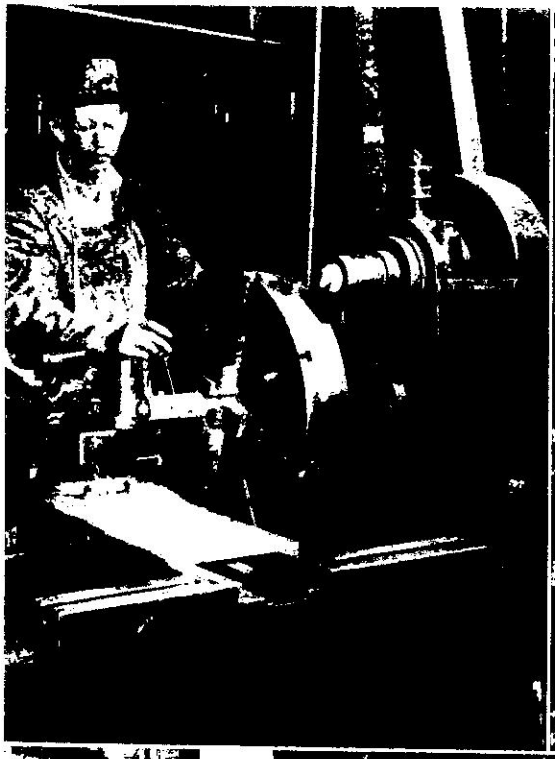
David E. Bralley operating radial drill.

Joe B. Stoots, Harry B. Childress and Sam P. Davidson plan the coming day's work.

Robert L. Davidson milling a key seat in a steel shaft.

John Wright and Jim Archer welding in the water treatment plant.

Charles E. Poole, Allen D. Dickens and Louis B. Mabry overhauling air compressor motor and controls.

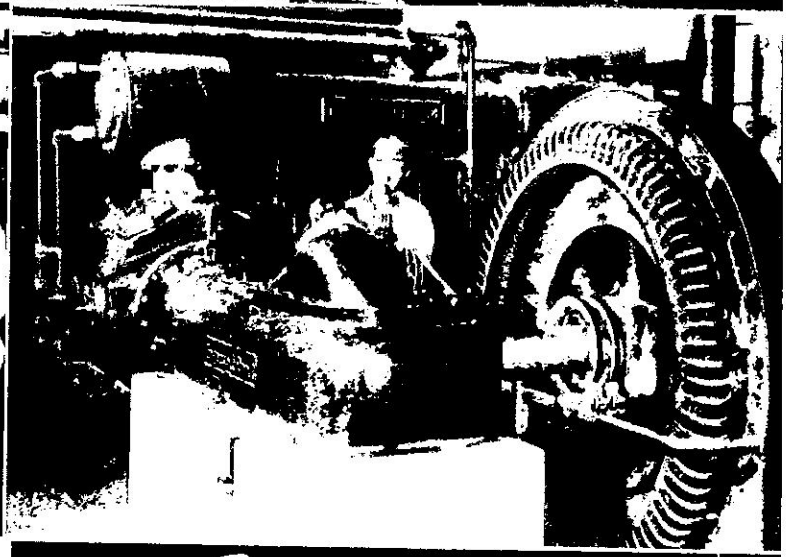


James R. Rankin turning bushing on lathe.

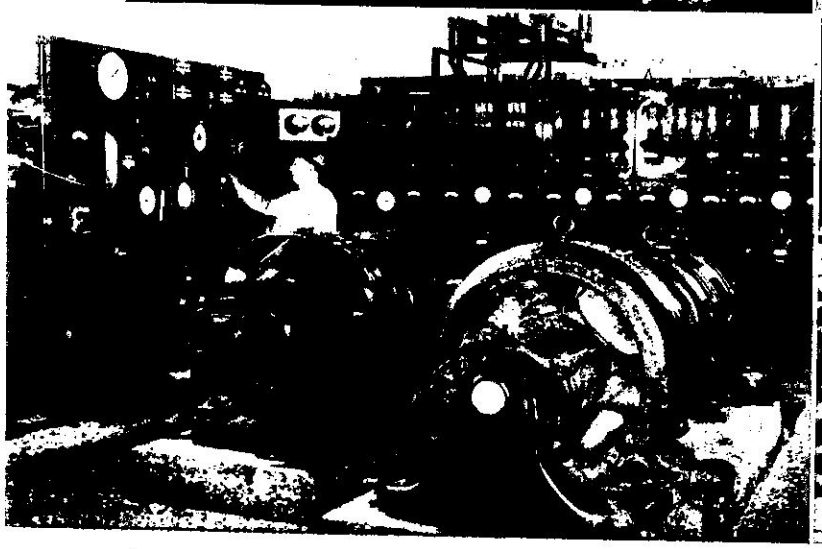
S. French Arnold, C. Roy Poole and Louis B. Mabry installing power cable for a pump.

John McRoberts welding in the machine shop.

John S. Fulford and Guy Jones repairing rock drills.



Claude Jones lubricating air compressor.



Jim Stoots checking plant power load.

Richard L. Edmonds, William T. Lawson, Clifton C. Moore, William B. Fulford and Raymond A. Carpenter repairing a storage battery locomotive for mine haulage.

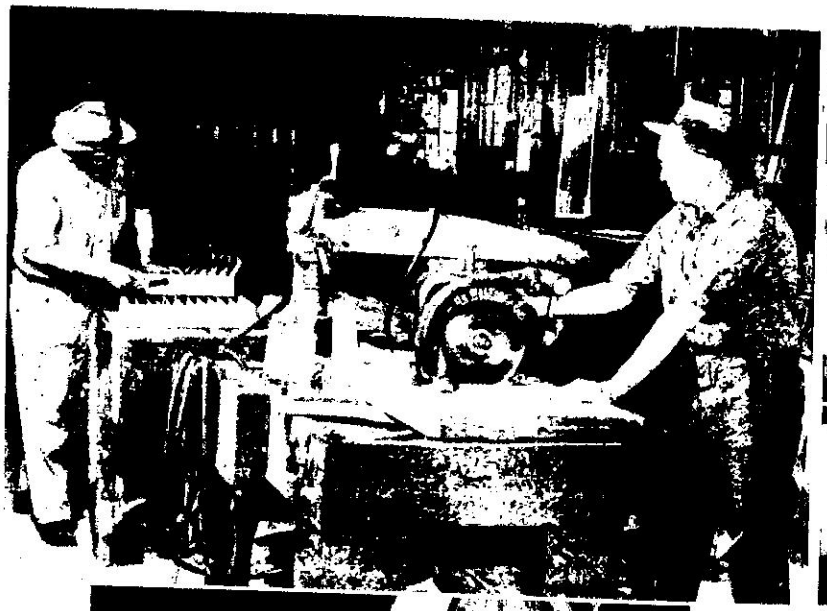
PLANT ENGINEERING DIVISION

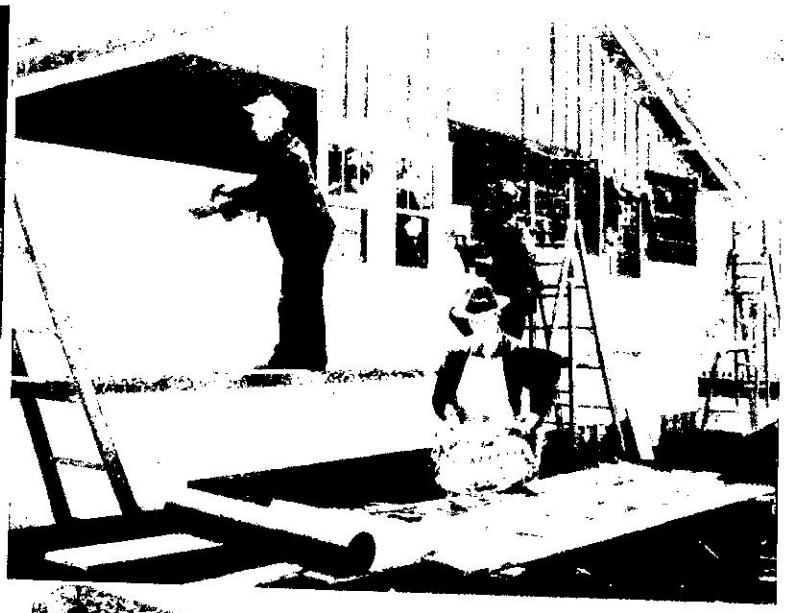
This Division is responsible for construction projects. The necessary design, drawings and cost estimates are made in the drafting room. Working plans are then made available to the different foremen who with the assistance of skilled personnel do the necessary construction throughout the plant.

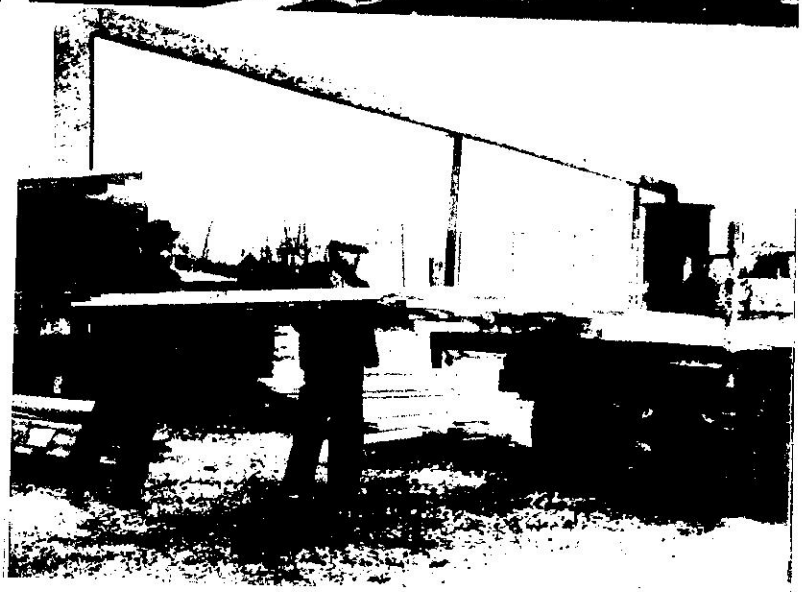
J. Floyd Edmonds, Henry C. Spraker and Robert E. Stoots laying a new sewer line in town.

Allan U. Stone and Alex M. Davis working on an engineering problem in the drafting room.

Harold E. Jackson making a print of an engineering drawing on the whiteprint machine in the engineers' office.







Orville Gallemore and Charles E. Mabry making diamond drill core storage trays in the carpenter shop.

Walton H. Gallemore cutting shelf brackets on the band saw in the carpenter shop.

Millard F. Porter, Chester Myers and Lee Brown building a house addition.

Robert F. Surratt, J. Malcolm Collins and V. Cody Largen placing shingles on a house.

R. Randolph White and Clarence M. Bralley loading a truck with lumber.

David G. Collins and Chester N. Myers, Jr. discussing the building of a cattle guard in town.

GEOLOGY DEPARTMENT

The prime purpose of the Geology Department is to find ore to keep the mine and mill operating.

Studies are made of rock formations in the mine and surrounding areas to determine the occurrence and extent of mineral deposits. In this exploratory work, detailed maps are prepared, considerable diamond drilling is undertaken, various analyses of ore samples are made, and many reports are written and studied before it can be determined whether a particular orebody is worthy of further development. After the size and shape of an orebody are calculated, steps are taken for the proper placement of mine workings for the extraction of ore.

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Marvin Dean and Roby Stoots lowering drill rods in a diamond drill hole.

Paul Dunford, Leo Page, Howard Miller and Edsel C. Jones surveying with a plane table.

Robert Fulton, Charles Arnold, John Johnsen and Warren Randolph putting together a picture of rocks on the map.

Warren Steele and Tom O'Neill studying and logging diamond drill core.

MINE ENGINEERING DIVISION

This Division is responsible for the survey work on the surface and in the underground workings of the mine. The engineers furnish survey control on all work in the mine, mapping this work in detail as it progresses. They assist in planning future work and keep accurate records of an engineering nature pertaining to the mine.

Dan Shewmon and Milton E. Huston plotting a stope survey

Walter Cecil Lawson, Milton E. Huston and Dan Shewmon surveying an underground stope.

Fred Pisacane, James E. McRoberts, Warren J. Randolph, Lee O. Fulford running a surface survey.

YARD SERVICE DIVISION

This Division, with its trained personnel, its tractors, angledozers, power shovels and trucks, renders services of all kinds throughout the plant. It builds and maintains roads, hauls and stores freight and supplies, loads the mill concentrates into railroad cars, keeps the plant buildings and grounds and the town in an orderly and clean condition, and assists in new construction work and general plant maintenance.

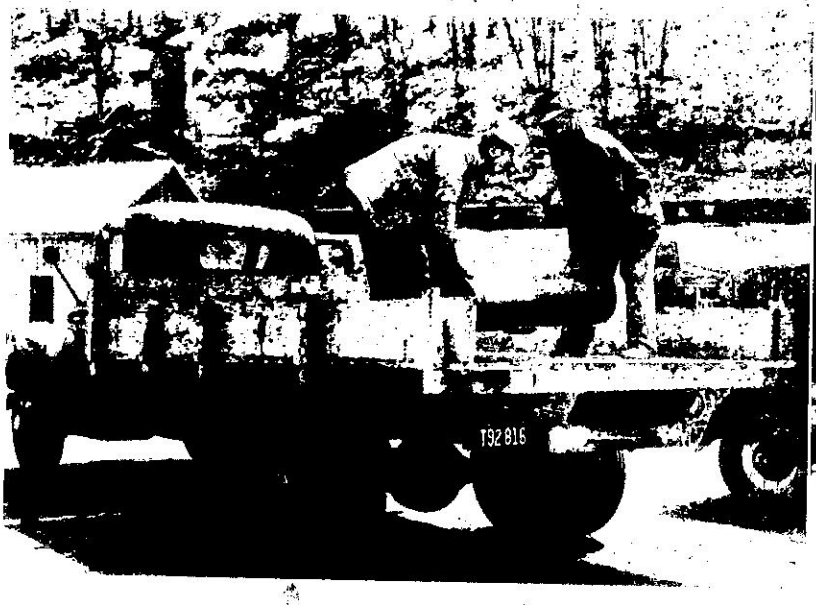
Charles B. Hawkins checking the time distribution in the yard office.

William G. Martin marking the level for loading concentrates in a railroad car.

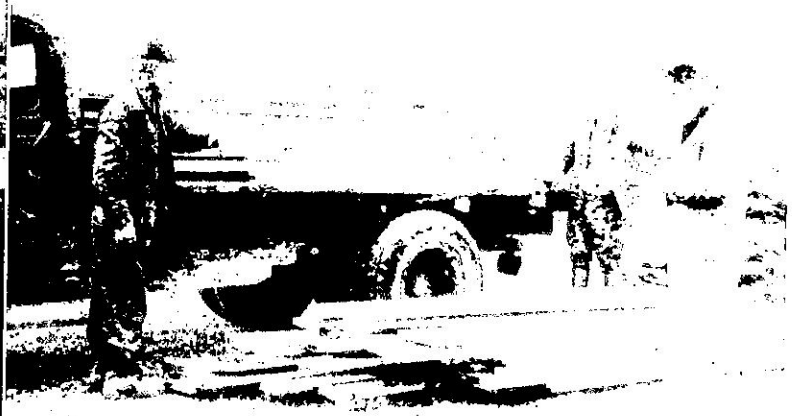
Malen C. Patterson inspecting fire fighting equipment in the yard.

James G. Pearman with his dog "Doc" punching in at one of the stations on his circuit as watchman.

John Alley cleaning between the rails in the yard.



W. Edward Sampson and Floyd L. Coake loading tile pipe on one of the plant trucks.



Dallas E. Spraker and Lee T. Crigger unloading lumber as W. Lee Jackson checks the quantity.

Victor A. Humphrey, Jerry S. Humphrey and Frank M. Waller building a concrete blockwall in yard.

Chester W. Arnold, Jr., Robert G. Sisk, C. Paul Dunford and James J. Harmon stacking green lumber in racks for air drying.

SERVICE DEPARTMENT

The Service Department comprises the Accounting, Purchasing, Personnel, Limestone and Store Divisions.

The Accounting Division assembles all data for the preparation of payrolls and earnings' checks; makes distribution of labor and supplies; bills and collects limestone sales; summarizes all data for the completion of cost sheets, and maintains controlling ledgers.

The Purchasing Division writes all purchase orders; is responsible for proper checking-in of all supplies and equipment as to specifications and quantities; processes invoices, and is responsible for operation of supply houses.

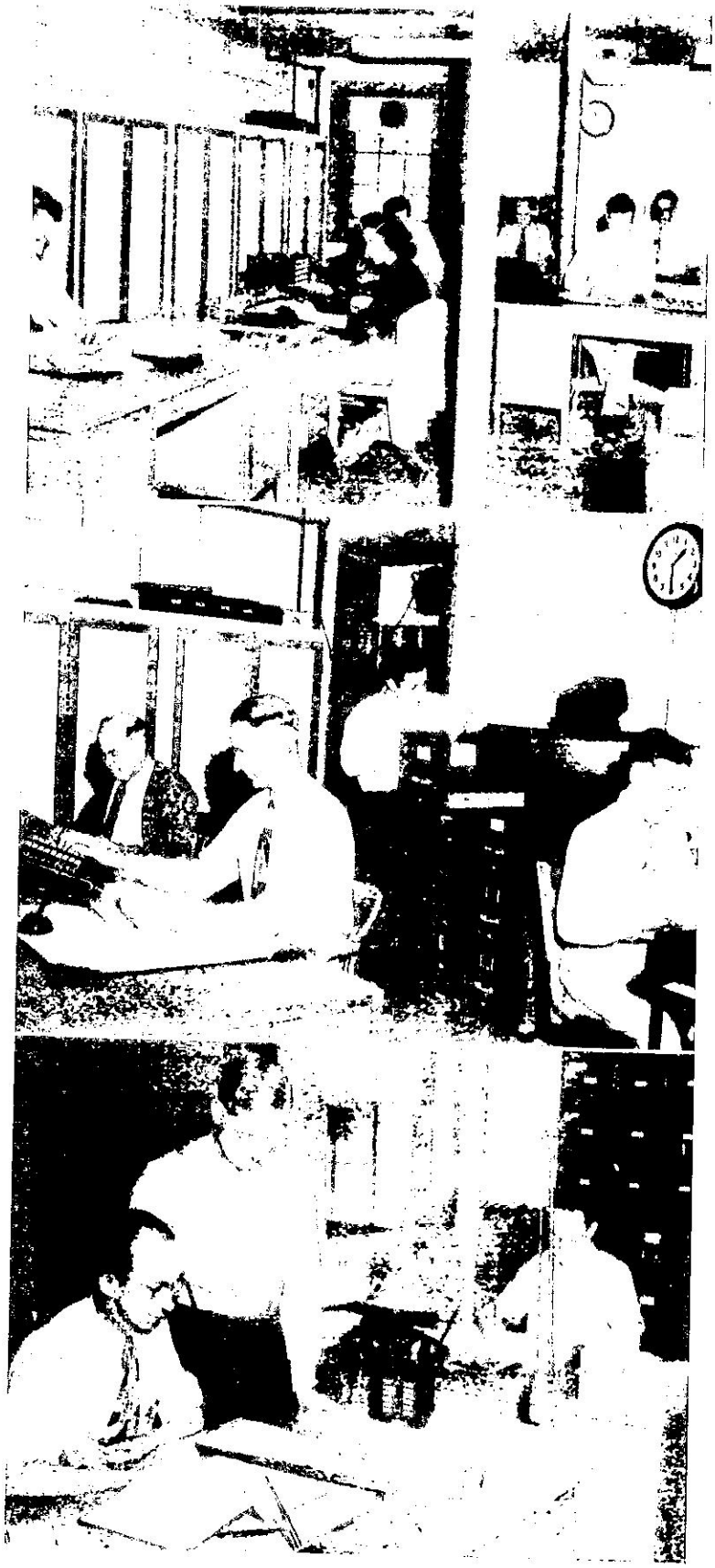
The Personnel Division serves employes in matters concerning their relationship with the Company. The Division is responsible for employment, service, medical, and work records, and is charged with such matters as labor reports, payroll and accident statistics, workmen's compensation, real estate, and public relations.

The Store Division carries stocks of groceries, meats, work clothing and shoes, gasoline and oil for convenience of employes, but sales are not limited to employes.

The Limestone Division is responsible for the storage, sale and shipment of limestone.

Limestone for carload shipments flows in pipes from the Mill to the Yard where it is stocked in large piles along the railroad track siding. After sufficient drainage and further treatment it is made suitable for sale as agricultural limestone and loaded into railroad cars for shipment.

Limestone is also hauled away in trucks by customers after it is reconditioned into a product which can be readily spread on farm lands.



Thomas G. Miller, Betty B. Keller, Weldon O. Jett, G. Wythe Sproker, Johnny V. Hilyer, C. Ray Manuel and Herman J. Heuser in the Accounting Division.

G. Wythe Sproker, C. Ray Manuel, Weldon O. Jett and Johnny V. Hilyer, handling limestone sales.

E. Byron Umberger, Edward J. Dean and Francis N. Blair in the Purchasing Division.

Edgar S. Shumate and James F. Mantz, in the Personnel Division.

J. S. Umberger and R. P. Taylor wait on a truck limestone hauler.

Mrs. Betty Bowers and Mrs. Dorothy Hilyer in the stenographic office.

E. H. Bralley, E. L. Caudle, G. J. Wallinger and Miss Hazel Stoots in the store.

Mrs. Mildred Fisher operates addressograph and duplicator machines.

J. E. Pritt and R. R. Burger dispatch mail and assign work.

SERVICE DEPARTMENT (continued)

Lawrence P. England and Howard H. Underwood moving feed hose on limestone stockpile in yard.

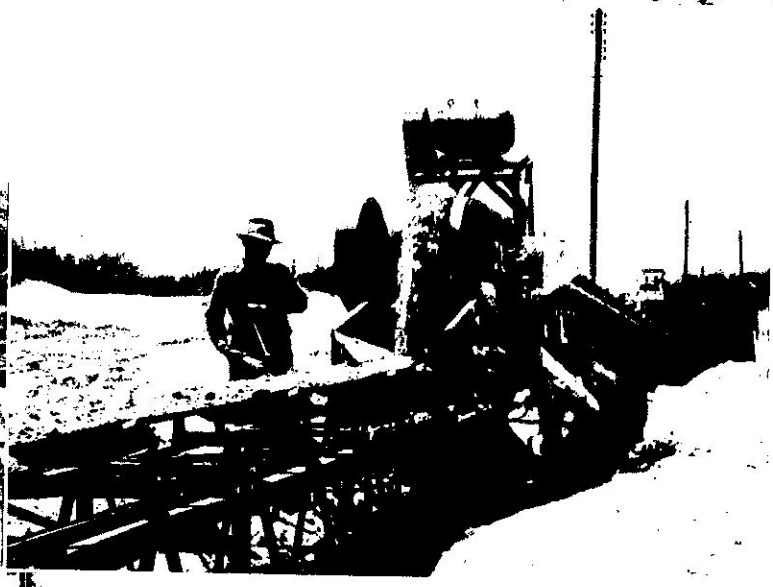
J. Luther Via loading limestone with a power shovel into a railroad car.

W. Donald Stoots shifting railroad cars with a tractor in the yard.

David A. Manley feeding limestone to the reconditioning plant with an angledozer.

R. Lester Spraker greasing a belt conveyor idler.

R. Lester Spraker cleaning screen and Herbert B. King inspecting impactor at the reconditioning plant.



Our Company

makes zinc metal and zinc

pigment from our zinc ore . . .

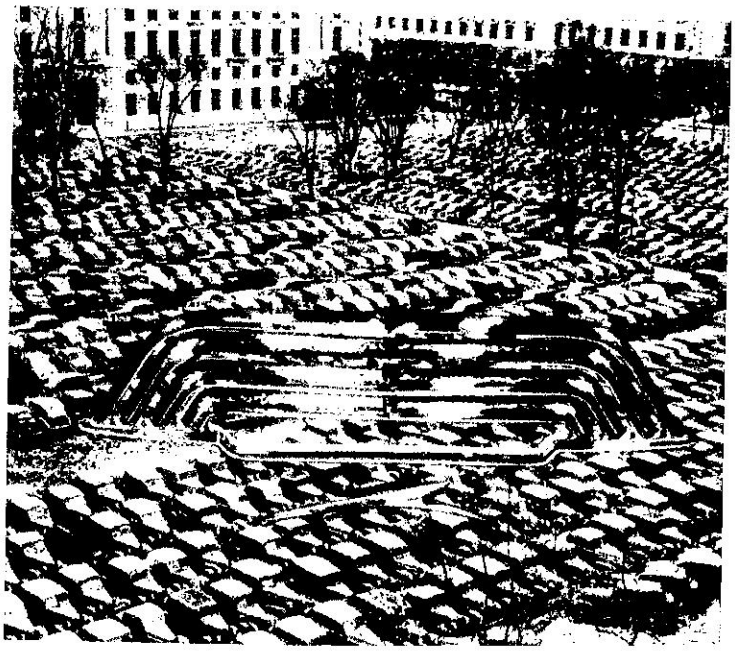
Many manufacturers use these

zinc products to make more

things for more people.

DIE CASTING

The automobile industry is the largest user of die castings made from alloys containing our Horse Head Special Zinc. Radiator grilles, fuel pumps, hardware and instrument panels are just a few of these castings you will find on the new cars. Zinc die castings also are used extensively in the manufacture of other products with which we are familiar — washing machines, refrigerators, business machines, hardware and small tools.



PAINT

Modern high grade paints — exterior and interior enamels, product finishes, metal protective coatings — depend on zinc pigments for their efficient and economical performance. Paint manufacturers use our zinc oxide, zinc sulfide, lithopone and zinc dust to impart to their products such qualities as durability, hiding power, good color, self cleansing and washability.

TRAFFIC PAINT Large quantities of lithopone are used in producing long wearing traffic paints for the country's roads and streets. Lithopone is found to be an excellent pigment in producing the unique properties which such paints must possess in order to withstand the outdoor conditions encountered.

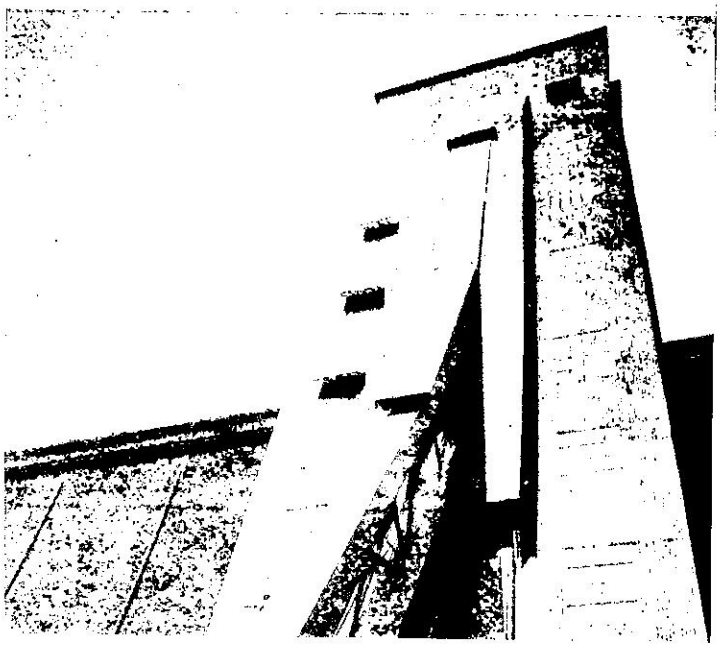
BRASS

Brass is an alloy of copper and zinc; it contains approximately 30% of zinc. A great deal of our Horse Head Zinc is used in the brass industry to produce high quality brass products such as household hardware, plumbing equipment, rods and tubes for industrial uses, and for a host of other products which require brass of a high degree of ductility.

GALVANIZING

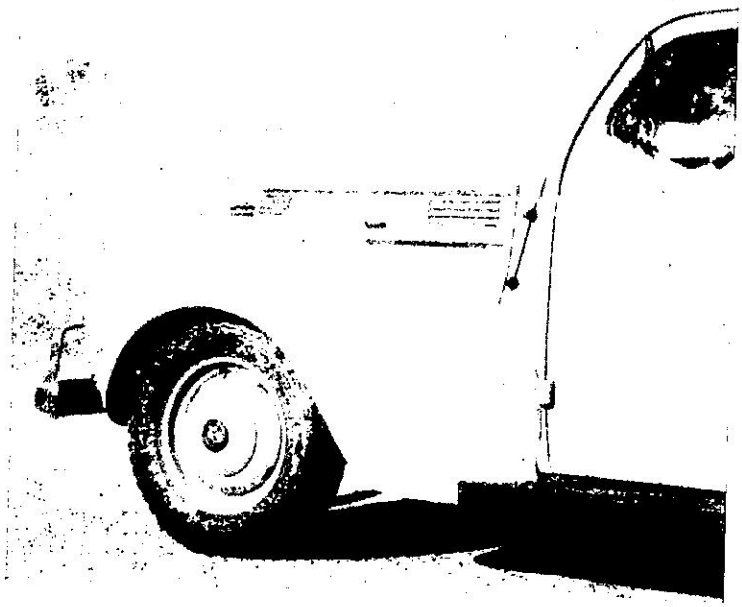
This is the process whereby a coating of zinc metal is applied to iron and steel surfaces, either by the hot dip method or by electro-galvanizing, to prevent iron and steel from rusting. It represents a very large field for zinc and, where superior adherence and ductility of the coating are required, our high purity Horse Head Brands of Zinc are preferred.

Galvanized sheets for roofing and galvanized wire fencing are zinc coated.



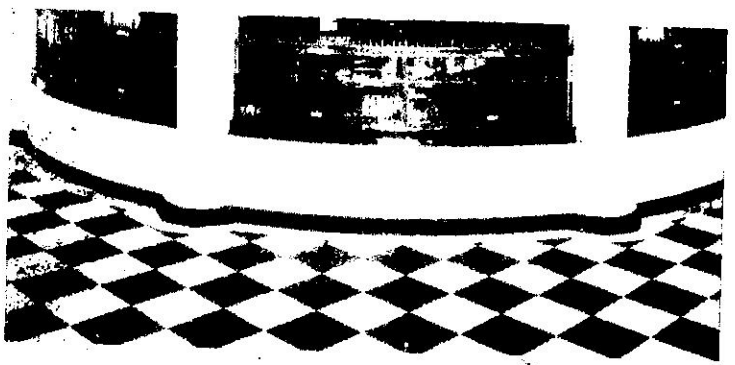
RUBBER

Rubber tires, tubes, boots, shoes, hose and many other articles, whether natural or synthetic rubber, are reinforced against wear and tear with zinc oxide. This pigment also serves as a chemical in rubber compounding to shorten the time of the curing process. The high hiding power and tinting strength of our zinc sulfide pigments are employed by rubber manufacturers in producing color effects in white and pastel rubber goods.



LINOLEUM

Lithopone is used in linoleum to serve much the same functions as it does in paint. It adds color and durability to the paint which forms the decorative and wearing surfaces of both printed linoleum and felt-base floor coverings.



CERAMICS

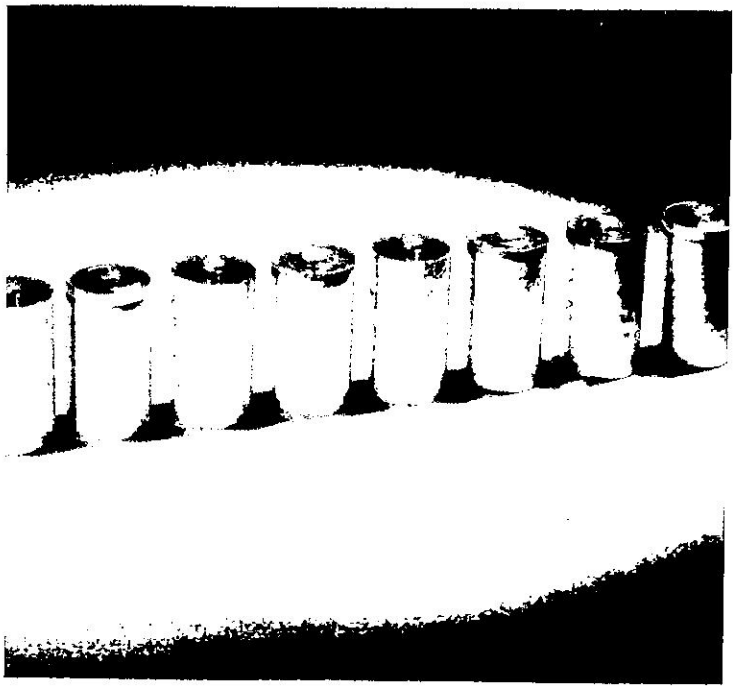
The ceramic industry uses zinc oxide in the manufacture of tableware, enamelware and glass. Zinc oxide imparts to these products good color, gloss and opacity; it also helps in giving such products a greater resistance to shock caused by sudden temperature changes. The manufacturer likes to use zinc oxide because it fuses readily with the other ingredients with which he is working.

COSMETICS

Our pharmaceutical zinc oxide, the purest commercial type available, is used in a variety of face powders, creams and ointments. This brand of zinc oxide has outstanding characteristics which make it popular with manufacturers in the drug and cosmetic industry. In addition to being harmless, it is protective, mildly astringent and adhesive.

ROLLED ZINC

Rolled zinc finds wide use in the fabrication of battery cans, weatherstrip, moldings, fruit jar tops, eyelets and grommets. Rolled zinc alloys are also supplied by us to this field for stamping, drawing, spinning and rolling of other items which require added stiffness and toughness.



METAL POWDERS

In this comparatively recent development in metal fabrication, metal powders are pressed to form small articles by a process known as compacting. Zinc, brass and copper powders produced by our Company are finding increasing application in this new and interesting metal consuming field.

Our Contribution to Modern Living

In the preceding pages you have seen the day by day operations of the Austinville plant. You have seen the men who perform these operations in producing basic raw materials for our Company's zinc metals and zinc pigments.

Likewise, you have seen the variety of uses of zinc products each representing a large American industry served by The New Jersey Zinc Company.

Wide acceptance of our Company's zinc products by major consuming industries has been due mainly to our ability to keep pace with their changing demands, and at the same time maintain rigid standards of quality and uniformity.

In producing zinc ore for the manufacture of zinc products, we at Austinville are playing an important part in the production of more and better things for more people. In so doing, we are contributing much to the comfort and enjoyment of modern living.

THIS IS THE TRADE MARK

THAT APPEARS ON PRODUCTS OF THE NEW JERSEY ZINC COMPANY AND SUBSIDIARIES

•

ZINC PIGMENTS

ZINC OXIDE PIGMENTS — ZINC SULFIDE PIGMENTS

LITHOPONE — ZINC DUST

LUMINESCENT PIGMENTS

ZINC BORATE

ZINC METALS AND ALLOYS

SPECIAL HIGH GRADE SLAB ZINC (99.99 + %)

HIGH GRADE SLAB ZINC

ZAMAK (ZINC DIE CASTING ALLOYS)

ROLLED ZINC AND ZILLOY

SHEETS AND STRIPS

PLATES AND CORRUGATED SHEETS

METAL POWDERS

BRASS — BRONZE — COPPER — NICKEL SILVER — ZINC

SPIEGELEISEN (Iron-Manganese Alloy)

LOW CARBON FERROMANGANESE

SULFURIC ACID

THE NEW JERSEY ZINC COMPANY

Austinville, Virginia

GENERAL VIEWS - AUSTINVILLE

Another view of town showing headframe at left.

The new and the old means of transportation are both in constant use.

The Staff House.

General view of town.