



CONTACT INFORMATION

Mining Records Curator
Arizona Geological Survey
1520 West Adams St.
Phoenix, AZ 85007
602-771-1601
<http://www.azgs.az.gov>
inquiries@azgs.az.gov

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Arizona Department of Mines and Mineral Resources Mining Collection

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10/02/86

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES FILE DATA

PRIMARY NAME: PAUL LIME PLANT

ALTERNATE NAMES:

COCHISE COUNTY MILS NUMBER: 571

LOCATION: TOWNSHIP 24 S RANGE 26 E SECTION 6 QUARTER SE
LATITUDE: N 31DEG 21MIN 46SEC LONGITUDE: W 109DEG 44MIN 05SEC
TOPO MAP NAME: PAUL SPUR - 7.5 MIN

CURRENT STATUS: PRODUCER

COMMODITY:

CALCIUM
STONE LIMESTONE

BIBLIOGRAPHY:

USBM PROD TABS
LIME PLANT
ADMMR PAUL LIME PLANT FILE





See: ABM Bull 180 p. 319, 390

See: ABM Bull. 129 p. 97

ABM Bull. 187, p. 11

CHEMSTAR LIME

CHEMSTAR LIME
2800 North 44th Street
Suite 400
Phoenix, AZ 85008-1557
Office 602-955-5711
FAX 602-468-0488

September 27, 1991

*Paul Lime Plant file
Cochise County*

Mr. Ken Phillips
Chief Engineer
Arizona Dept. of Mines & Mineral Resources
1502 W. Washington
Phoenix, AZ 85007-3210

Dear Mr. Phillips:

Regarding your recent conversation with Mr. Brad Moss, we want to help you squelch any rumors about shutting down our Douglas Limestone mining and lime manufacturing facility.

The Douglas lime plant is a very important segment of Chemstar's lime production capacity. It furnishes lime to all of the copper concentration operations of Phelps Dodge Corporation, Cyprus Sierrita Corporation, Asarco, Inc. and Magma Copper Company. Chemstar intends to continue to operate the Douglas plant in the foreseeable future.

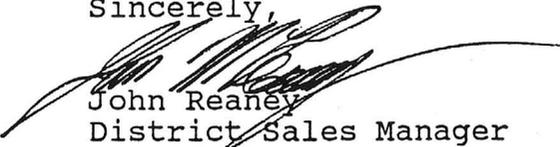
We also operate the largest lime manufacturing plant west of the Mississippi River at Nelson, Arizona. Total lime capacity of both operations is in excess of 2,600 tons of high calcium quicklime per day.

We are continuing to explore limestone deposits in the western United States and have plans to increase production at selected new sites in the future. We are presently building a new 600 ton capacity lime operation at Soda Springs, Idaho with another plant in engineering for our property near Winnemucca, Nevada.

We are enclosing brochures of Chemstar Lime Company and the Chemical Lime Group, for your interest.

If I can be of any further assistance to you, please call on me at any time.

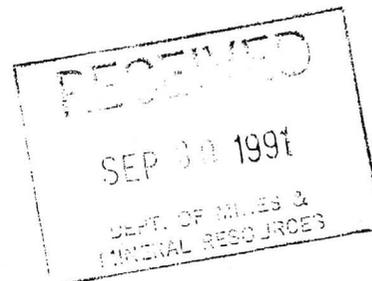
Sincerely,


John Reaney
District Sales Manager

JMR/dd

Enclosure

cc: Bob Plains
Bob Derks
Dave Reilly



ABSTRACTED FROM ADMMR ACTIVE MINES DIRECTORY, 1992

Paul Lime Plant file

CHEMSTAR LIME

2800 N. 44th St., Suite 400, Phoenix, AZ 85008 - Phone 955-5711.

President Dave Reilly
Vice President, Manufacturing & Engineering Larry Warney
Vice President, Marketing Bob Derks
Vice President, Industrial Sales Bob Plains
District Sales Manager John Reaney
Chief Engineer Bill McCandlish
Manager, Technical Services Starr Curtis
HiCal Operations Manager Ed Barry
Materials Manager Mike Pinnau
Distribution Manager John Mc Mullan
Transportation Manager Chris Bruskes
Douglas Quarry & Plant T24S R26E Sec. 7

Route 1, Box 110, Douglas, AZ 85607 - Phone 364-2429 - Employees: 60 -
Quarry and plant located at Paul Spur - 3 lime kilns - Plant capacity rated at
1000 tons of lime per day.

Plant Manager Jerry Young
Production & Maintenance Superintendent Richard Anderson
Quarry Superintendent vacant
Production Services Superintendent Don Williams

ABSTRACTED FROM ADMMR ACTIVE MINES DIRECTORY 1991

CHEMSTAR LIME

2800 N. 44th St., Suite 400, Phoenix, AZ 85008 - Phone 955-5711.

President

Dave Reilly

Vice President, Sales Bob

Plains

Vice President, Manufacturing William E. Dodge

Vice President, Engineering Bill McCandlish

Purchasing Manager Mike Pinnau

Nelson Quarries & Plant T25N R10W Sec. 25

P.O. Box 370, Peach Springs, AZ 86434 - Phone 769-2271 - Employees:
74 - Limestone quarry - Lime plant rated at 1800 tons of lime per
day.

Plant ManagerEd

C. Barry

Production Superintendent Jerry Young

Maintenance Superintendent Ed Banfield

Quarry Superintendent Pat Terbilcox Plant

Buyer Danny Roberts

Shipping/Transportation Coordinator Joe Fuentes

Douglas Quarry & Plant T24S R26E Sec. 7

Route 1, Box 110, Douglas, AZ 85607 - Phone 364-2429 - Employees:
60 - Quarry and plant located at Paul Spur - 3 lime kilns, plant capacity
rated at 1000 tons of lime per day.

Plant Manager Mike S.

Eliason

Production & Maintenance Superintendent Richard Anderson

Quarry Superintendent R. Dean Vaughn

Production Services Superintendent Don Williams

ABSTRACTED FROM ADMMR ACTIVE MINES DIRECTORY, 1989

CHEMSTAR INC.

2800 N. 44th St., Suite 400, Phoenix 85008 - Phone 955-5711.

President John Crawley
Vice President, Sales Charles Cook
Vice President, Manufacturing William E. Dodge
Vice President, Engineering Bill McCandlish
Vice President, Finance Mark T. White
Purchasing Manager Mike Pinnau

Douglas Quarry & Plant

T24S R26E Sec. 7

Route 1, Box 110, Douglas 85607 - Phone 364-2429 - Employees 60 - Quarry
and plant located at Paul Spur - 3 lime kilns, plant capacity rated at
1000 tons of lime per day.

Plant Manager Mike S. Eliason
Production & Maintenance Superintendent Richard Anderson
Quarry Superintendent R. Dean Vaughn
Production Services Superintendent Don Williams

ABSTRACTED FROM ADMMR ACTIVE MINES DIRECTORY, 1988

CHEMSTAR INC.

2800 N. 44th St., Suite 400, Phoenix 85008 - Phone 955-5711.

President John Crawley
Vice President, Sales Charles Cook
Vice President, Manufacturing Dave Johnson
Vice President, Engineering Bill McCandlish
Purchasing Manager Mike Pinnau

Douglas Quarry & Plant T24S R26E Sec. 7

Drawer T, Douglas 85608 - Phone 364-2429 - Employees 60 - Quarry and plant located at Paul Spur - 3 lime kilns rated at 100 tons of lime per day.

Plant Manager Mike S. Eiasen
Production & Maintenance Superintendent Richard Anderson
Quarry Superintendent R. Dean Vaughn

ABSTRACTED FROM ADMMR ACTIVE MINES DIRECTORY, 1990

CHEMSTAR LIME

2800 N. 44th St., Suite 400, Phoenix, AZ 85008 - Phone 955-5711.

President Dave Reilly
Vice President, Sales..... Bob Plains
Vice President, Manufacturing William E. Dodge
Vice President, Engineering Bill McCandlish
Purchasing Manager Mike Pinnau

Douglas Quarry & Plant T24S R26E Sec. 7

Route 1, Box 110, Douglas, AZ 85607 - Phone 364-2429 - Employees:
60 - Quarry and plant located at Paul Spur - 3 lime kilns, plant capacity
rated at 1000 tons of lime per day.

Plant Manager Mike S. Eliason
Production & Maintenance Superintendent Richard Anderson
Quarry Superintendent R. Dean Vaughn
Production Services Superintendent Don Williams

Visited property interviewed secretary - no changes. GWI WR 1-17-66

Visited Paul Lime Plant, Mr. Hansen and Mr. Ames were not in, left an Active Mine List. GWI WR 7-9-66

Visited the Paul Spur Lime Co., Mr. Hansen Secy. - left copy of Active Mine List. Company now installing a new Kiln. GWI WR 11-12-66

Active Mine List Nov. 1967 - 53 men
Active Mine List April 1968 - 50 men

Paul Spur Lime curtailed production during the strike. GWI Annual Report 7-1968

Active Mine List Oct. 1968 - 53 men

The Paul Lime Co. is running as usual. GWI QR 3-1969

Active Mine List April 1969 - 53 men - Howard Ames, Jr., Gen. Mgr. P.O. Drawer T, Douglas

Paul Lime Co. continued running at a high production rate. GWI QR 9-1969

Active Mine List Oct. 1969 - 58 men - Howard Ames, Jr.

Visited Paul Spur Lime Plant - new kiln being constructed. GWI WR 6-6-70

Active Mine List May 1970 - 59 men - Howard Ames, Jr., Gen. Mgr.
Active Mine List Oct. 1970 - 59 men - " " " " "

Mine visit - Paul Lime Plant, new kiln construction progress okay. GWI WR 12-5-70

Mine visit | Paul Lime Co. is installing a new kiln of larger size than the last one. GWI Quarterly Report 12-31/70

Paul Spur: A new large kiln has been installed. It is reported that the company is having trouble with the Cochise County pollution department. GWI QR 4-1-71

Mine visit - Paul Lime Plant. GWI WR 4-12-71

Mine visit - Paul Lime Plant. GWI WR 6-7-71

PAUL LIME PLANT

COCHISE COUNTY

Paul Spur continues production. The new kiln has been put in operation. They are also supplying contracts for the Santa Rita Mining Co. Limestone Division until their new plant begins operation. GWI QR 6-30-71

Directory of Mining - August 1971 - 60 men.

December 6, 1971 - Learned that Santa Rita Mining Co. (Homestake Production Co.) bought this company, the Paul Lime Plant.

Paul Sp^r Mine visit. Paul Spur. GWI WR 10/7/71

Paul Lime plant, no change. GWI WR 2/10/72

ABM Bull. 180, p. 319, 390

Mine visit. Paul Spur Lime. New road around quarry finished. GWI WR 4/6/72

Mine visit. Paul Spur Lime plant. GWI WR 6/15/72

Paul Spur Lime has a new county road around the south side of their operations. The Company has been purchased by Homestake Production Co. with J. Robison the vice Pres. GWI QR Jan.-March '72

Paul Lime Co. continues production with plans to extend the mining operations to the south of the present pit. GWI 4 1/2 '72

Mine visit. Paul Spur Lime Co. operations approximately the same as last time. GWI WR 12/1⁴~~1~~/72

Active Mine List - October 1972 - Empl. 59

I traveled on to Paul Lime Plant Inc. nine miles west of Douglas. There I had a field interview with Mr. Hansen who gave me data to be used in the new Active Mines Directory. REL WR 9/27/73

Clare Benson, Dist. Sales Manager of Flintkote reports that Paul Spur Lime is for sale. GWI WR 11/13/73

CAN-AM CORP.

Mine visit - Douglas to old Paul Lime Quarry, along highway 80, near Cazador - no activity. Location Section 2+11 T23S R28E. WR GI 5-13-77.

WR MG 1/24/78 - The plant is planning to convert from natural gas to coal. 2/28/78 sef

MG WR 4/2/82: Visited the Paul Lime facility, Cochise County. In addition to shipping lime to the mines and smelters, it sells lime to Arizona Public Service and to the Pima County water treatment plant. Generally it does not sell lime in Mexico. Currently the company is operating only 3 days per week.

5/4/83: Ownership now listed as Paul Lime Division - Can-Am Corporation, Drawer T, Douglas, AZ 85607. Phone 364-2429, as recorded in the Directory of Active Mines, January 1982.

MG WR 8/19/83: Paul Lime has had a difficult year. A lime plant at Naco, Sonora, Mexico, has been supplying Arizona customers at a cheaper rate than Paul Lime. The Naco plant is now associated with the Dravo Corporation and Dravo is getting a lot of contracts that Paul Lime used to have. There is no duty required on lime moving from Mexico into the United States.

MG WR 9/21/84: During the past couple of years, the Paul Lime Division, Can-Am Corp. (Cochise Co) has been faced with what the company felt was unfair competition from the lime plant located in Mexico, near Naco, Sonora. The naco plant was selling lime in Arizona at prices considerably lower than those offered by Paul Lime. This situation no longer exists, however, because the Federal Trade Commission imposed a 55% tariff on Naco lime, effective mid-August, 1984.

MG WR 8/22/86: Received reprot that the Canadian parent company of Paul Lime is declaring bankruptcy. A buyer for the Paul Lime operation is being sought.

STATE OF ARIZONA
DEPARTMENT OF MINERAL RESOURCES
MINERAL BUILDING, FAIRGROUNDS
PHOENIX, ARIZONA 85007

Paul Lime file

May 6, 1976

Mr. H.C. Hansen
Secretary-Treasurer
Paul Lime
Drawer T
Douglas, Arizona 85607

Dear Mr. Hansen:

Thank you for your letter of April 30 regarding ownership of Paul Lime. We apologize for the error. Our error is practically unforgivable since we had the correct information and failed to use it.

Thanks again for being so helpful. We appreciate your efforts and thoughtfulness in taking the time to write to us. We will correct the error.

Very truly yours,

John H. Jett
Director

95

C
O
P
Y

PAUL LIME
DIVISION OF CAN-AM CORPORATION
PAUL SPIR, ARIZONA

R *PC* *gm*

ADDRESS MAIL TO:
DRAWER T
DOUGLAS, ARIZONA 85607

April 30, 1976

TELEPHONE VIA DOUGLAS
AREA CODE 602
364-2429

Department of Mineral Resources
Mineral Building - Fairgrounds
Phoenix, Arizona 85007

Gentlemen:

We recently received a copy of your March, 1976 "Directory of Active Mines in Arizona".

On page 15 you have listed Paul Lime Plant, Inc. with details of mailing address, telephone number, etc.

In May, 1975 Paul Lime Plant, Inc. sold all its assets to Can-Am Corporation who operate the property as its Paul Lime Division.

Paul Lime Plant, Inc. is a wholly owned subsidiary of Home-Stake Production Company of Tulsa, Oklahoma who no longer operate any properties in the State of Arizona.

All of the persons listed in your directory are officers and/or employees of Can-Am Corporation, not Paul Lime Plant, Inc.

Can-Am Corporation has assumed the same mailing address and telephone number as the previous operators of this plant.

Please make the appropriate corrections in your records.

CAN-AM CORPORATION

H. C. Hansen

H. C. Hansen
Secretary-Treasurer

HCH:hb

*Please make
desired correction to
possession
future*

RECEIVED
MAY 3 - 1976
DEPT. MINERAL RESOURCES
PHOENIX, ARIZONA

for reports

*cc - Tucson office
5/3/76 RP*



INTRODUCTION

America has long depended on Arizona for copper. For nearly a century, Arizona's copper industry has depended on Paul Lime. Since 1911, Paul Lime has been serving the Arizona copper industry with quality products, state-of-the-art technology, and a spirit of cooperation.

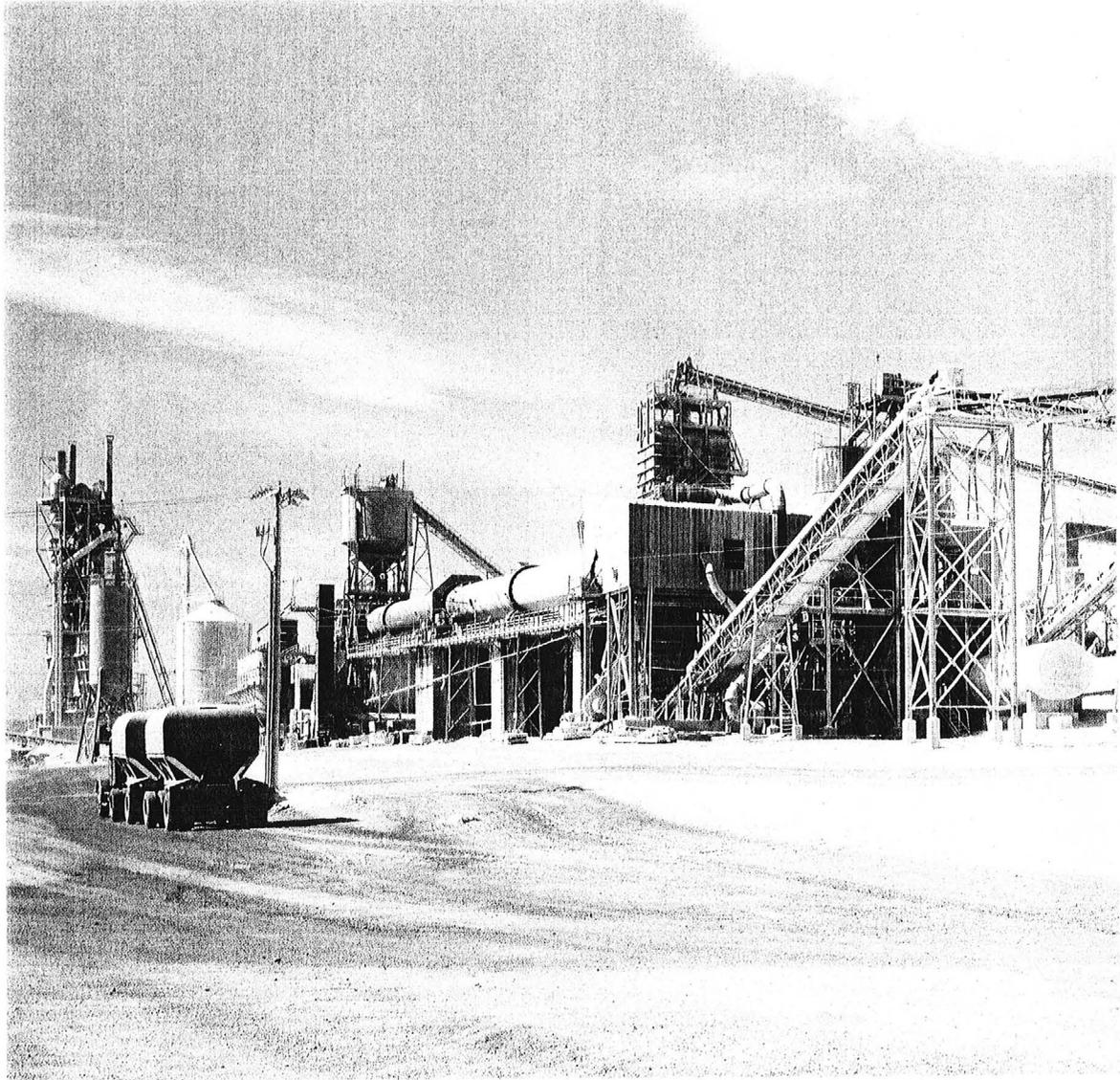
Today over half of the 15 regional copper mines purchasing lime for production depend on Paul Lime. In addition, Paul Lime supplies southwestern gold and silver processing companies, steel mills, construction companies, electric power plants, and sewage and water treatment facilities throughout the region.

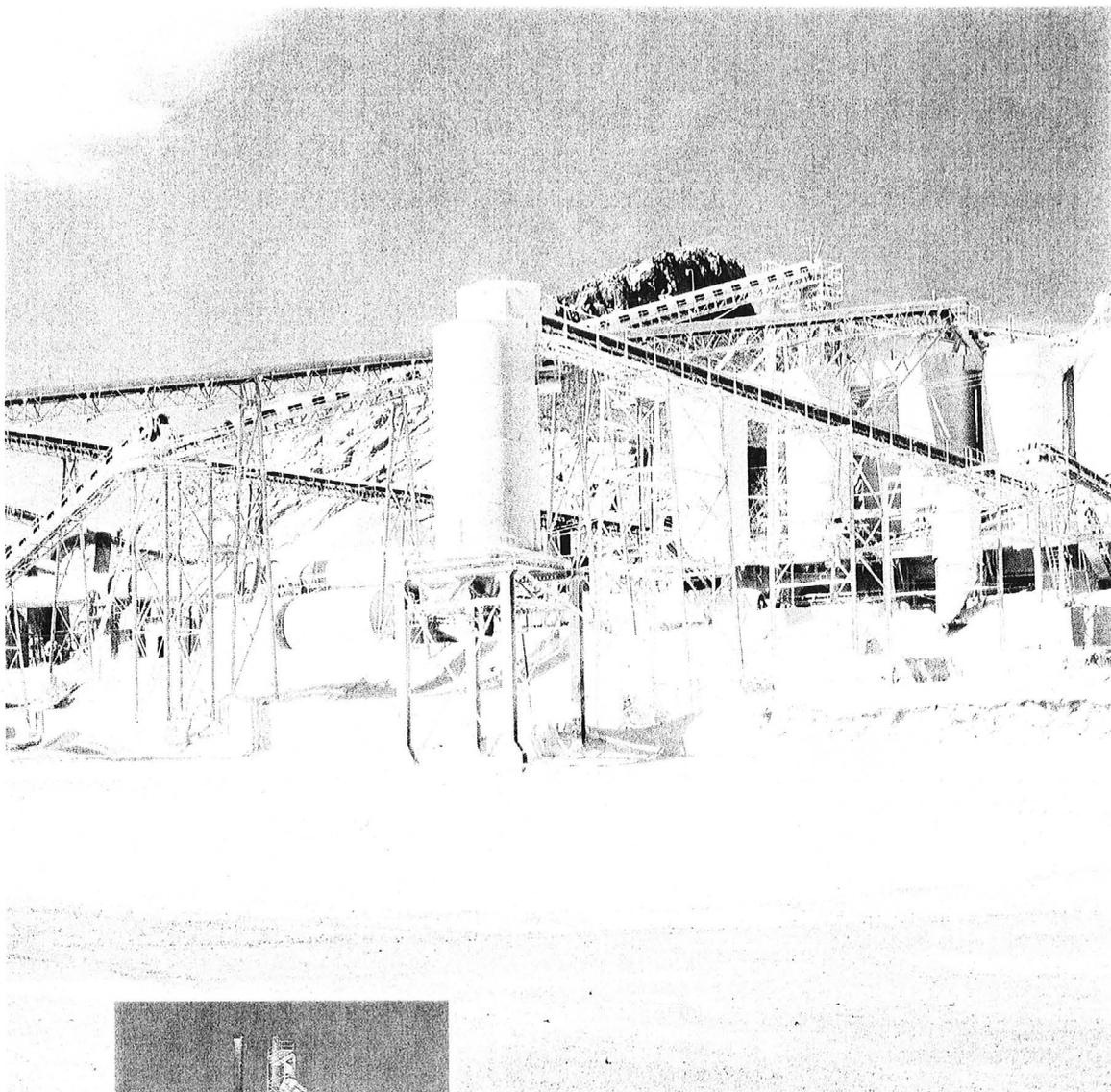
Operating around the clock, Paul Lime fills daily, weekly, and monthly orders, shipping to customers by railroad and truck. At Paul Lime, we guarantee our products. And we guarantee our customer's satisfaction. We are proud of our excellent service record, and proud of our contribution to the industries that have been so much a part of our nation's growth.

A panoramic view of the modern Paul lime processing plant. From left to right are the verticle kiln, rotary kilns, lime storage and the truck load-out facilities.

PAUL LIME

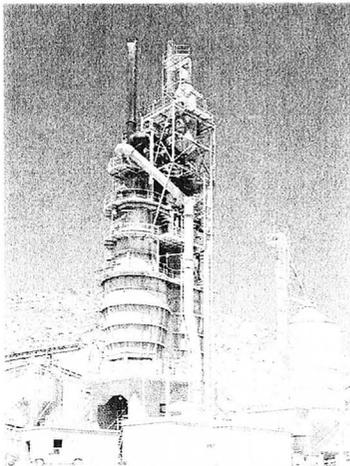
Around the turn of the century, as the demand for copper increased, mining and smelting operations were established in Southern Arizona creating an urgent need for limestone as a fluxing agent. To fill that need, Alfred Paul Sr., a pioneer industrialist, established the Paul Lime Plant—a combination limestone mine and lime production facility—initiating an industrial partnership from which Arizona would emerge as one of the world's leading producers of copper.





Paul Lime began mining limestone in 1911 and calcining lime in 1913. Mr. Paul developed his mine and built his processing plant at the base of a large rise of exposed Mural limestone. The plant was ideally situated within twelve miles of America's most prolific new copper mine at Bisbee, Arizona, and within eight miles of a new copper smelter at Douglas, Arizona. In the years that followed, Paul Lime expanded constantly to keep pace with copper's ever-increasing demand for lime.

Today, open-pit mining operations and the sophisticated Paul Lime kiln system yield 3000 tons of raw stone and 1000 tons of industrial grade lime each day.

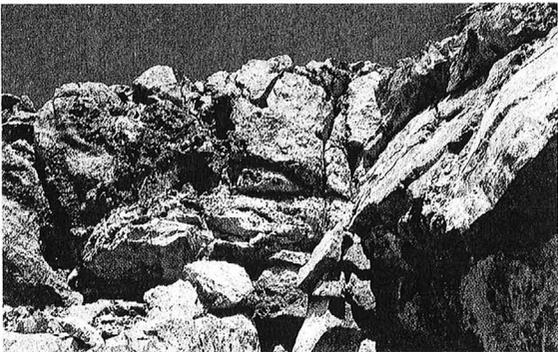


High calcium limestone is loaded into haul trucks for transport to the crushing and screening plant.

A LAND OF WEALTH

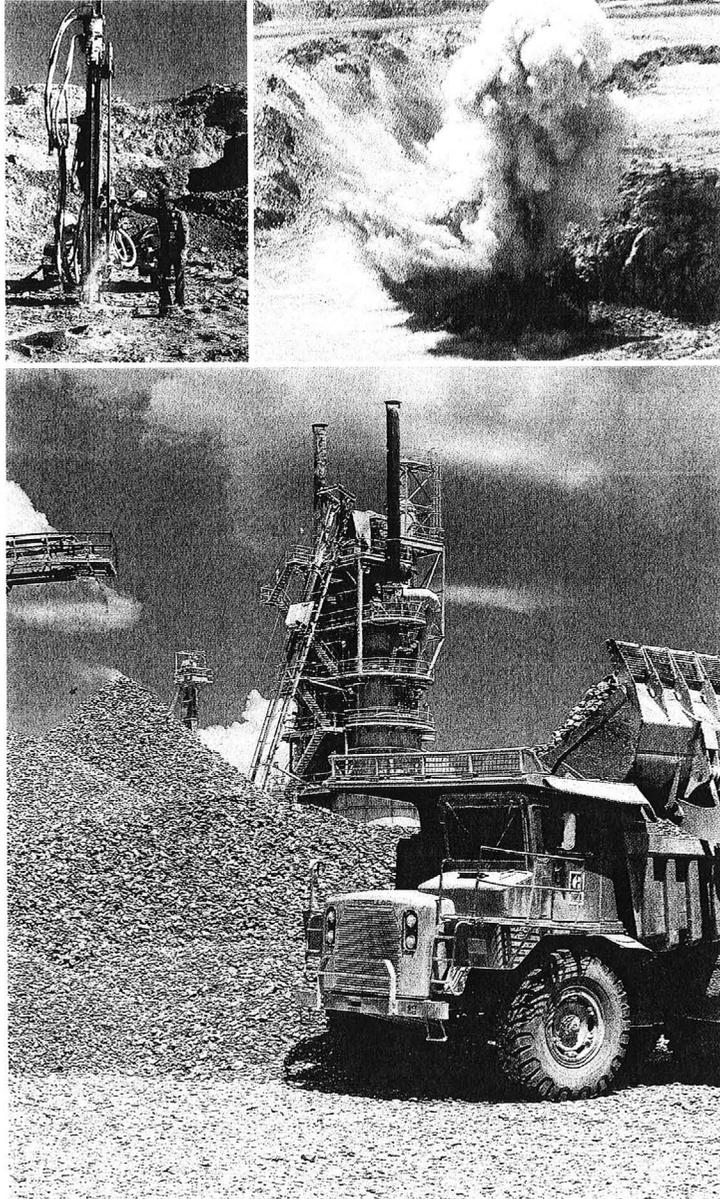
In Southeastern Arizona, located conveniently near rich copper deposits, Paul Lime has acquired massive limestone deposits. These deposits, no less than 110 million years old, yield a small crystal limestone of exceptional mechanical strength. This stone, nearly free of impurities, is well suited for lime production. Based on the current 500,000 ton yearly mining capacity, geologists estimate local reserves extending well into the next century.





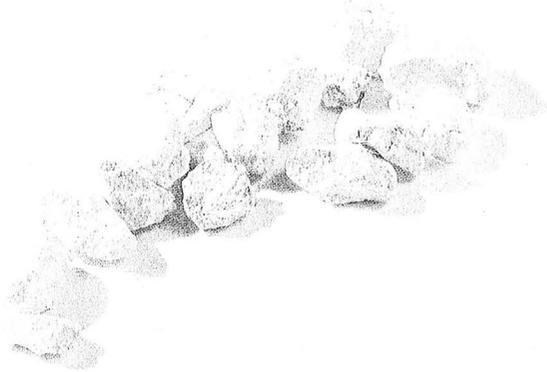
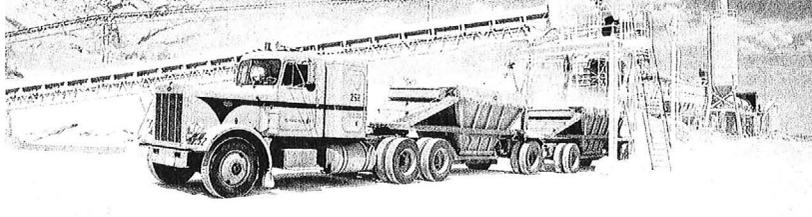
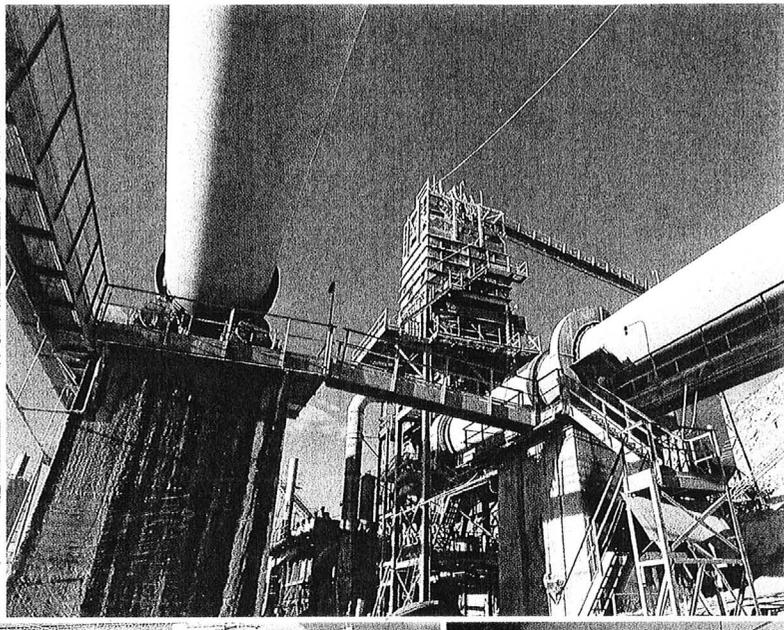
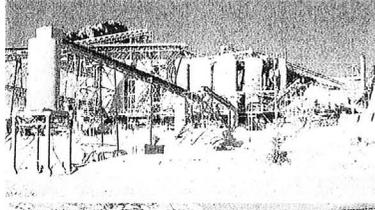
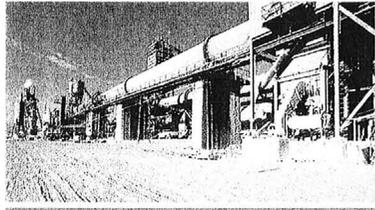
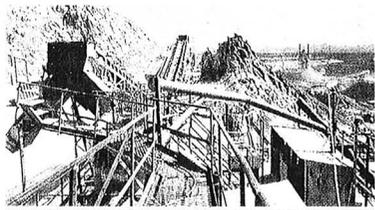
PRODUCTION

At Paul Lime, each production step requires precision, expertise, and attention to detail. Beginning at the quarry, miners prepare the raw stone for blasting. The stone is drilled in an 8 by 8 foot pattern to a depth of 40 feet. The holes are then packed with blasting agents. A 12,000 ton shot is put off twice each week to break the rock from the quarry face. The rock is then loaded into trucks by a wheel loader and transported to the apron feeder which feeds the primary crusher and scalping screen. Subsequent secondary screening isolates kiln feed stone, crushed rock, and fluxing material while the remaining oversized stone is reprocessed in a closed-circuit conveyor system to a cone crusher.



After screening, the kiln feed stone, crushed aggregates, and fluxing materials are conveyed to their respective storage piles. At Paul Lime, two rotary kilns and a parallel flow, regenerative shaft kiln comprise a highly sophisticated energy efficient calcining system with a capacity yield of 1000 tons of lime per day. The shaft kiln, producing 450 tons daily, requires roughly half the energy of its rotary counterparts. The technical sophistication and relative economy of this system help Paul Lime produce a cost effective and consistently superior product.

Regular product analysis is a basic part of quality assured production. At Paul Lime, laboratory technicians run daily composite tests for reactivity and available Calcium Oxide on samples from each production shift. Tests for loss on ignition, available lime, total lime, insolubles, and reactivity are among the rigorous quality control standards imposed on production to ensure our customers of the highest quality products.

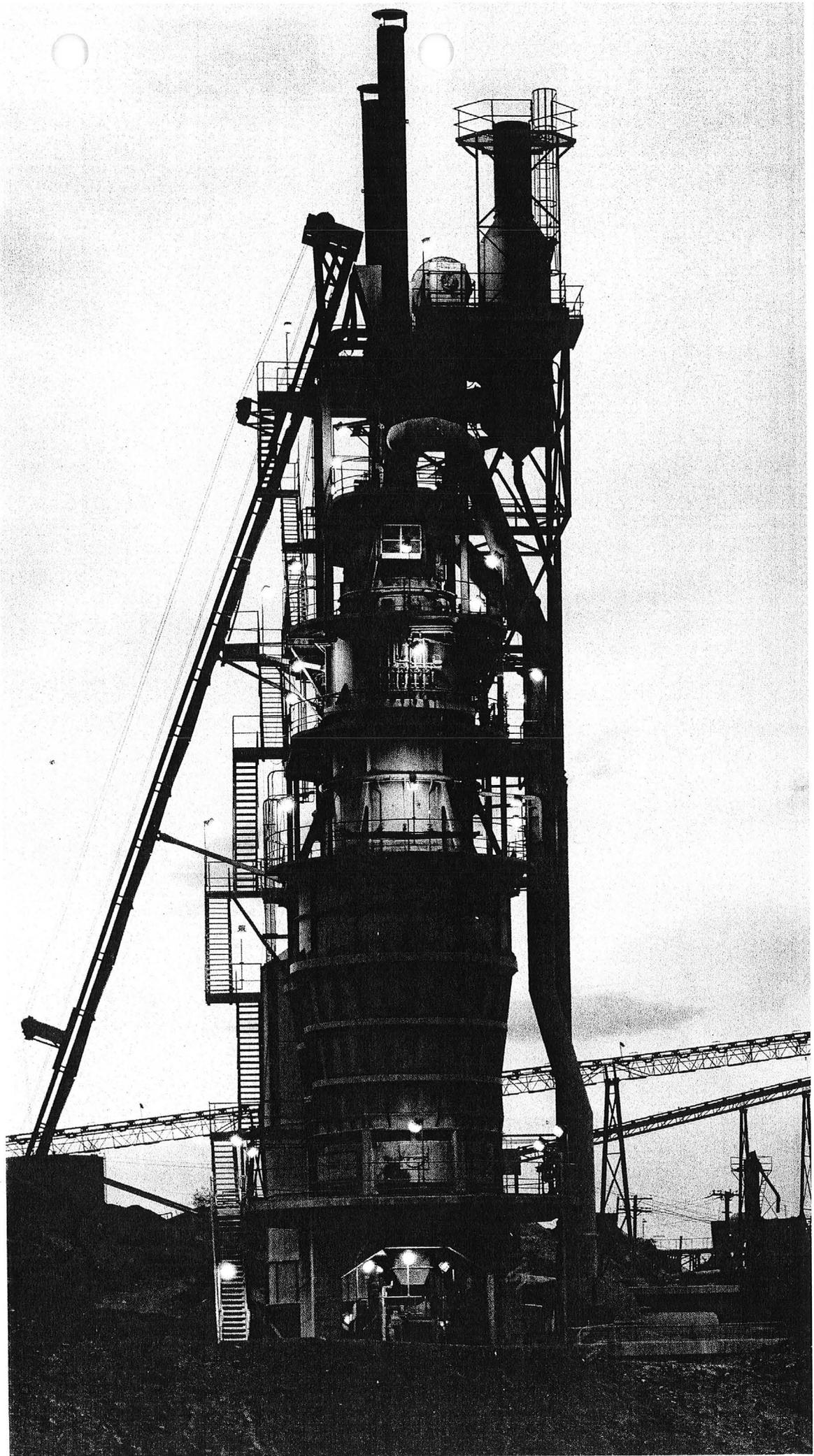


THE PRODUCTS

Paul Lime produces flotation lime for the copper industry, fluxing lime for the steel industry, and chemical lime for water purification and air pollution control. Paul Lime also supplies flux stone for the copper smelters and crushed stone for roads and construction. Paul Lime's soft-burned, highly reactive lime has an average available Calcium Oxide content of 90% with a slaking rate well in excess of 40° Centigrade in three minutes. Paul Lime's crushed stone products meet or exceed the standard set by A.S.T.M. for construction materials and the American Railroad Engineering Association specifications for railroad ballast materials.

THE PAUL LIME COMMITMENT

Like the copper mines, we have made dramatic progress since our sledgehammer and wheelbarrow beginnings. Our growth has been guided by innovation and a desire to serve our customers. And our commitment has never changed: High Quality Products and Exceptional Service. These are the standards by which we have earned our reputation. Paul Lime: the most consistent and dependable supplier of top-quality lime products in the Southwest.



DEPARTMENT OF MINERAL RESOURCES

STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine Paul Lime Plant

Date January 16, 1964

District Paul District, Cochise Co.

Engineer Axel L. Johnson

Subject: Field Engineers Report. Information from Harold C. Hansen.

References: Reports of Sept. 15, 1961 and Sept. 10, 1952.

Owners & Operators: Paul Lime Plant, Inc.
P.O. Box 1060, Douglas, Ariz.
Harold Ames, Jr., Gen. Mgr. P.O. Drawer T, Douglas, Arizona (1966)
Harold C. Hansen, Office Manager

Number of Claims: Original plant and quarry is located on about 200 acres of patented land which include the mineral rights.

6 claims were located adjoining the original tract on Federal land about one year ago.

Principal Minerals: Limestone rock

Present Mining Activity: Mining the limestone rock, crushing same in a crushing plant, and calcining the crushed material in 3 rotary horizontal kilns. A total of 57 men working.

Mining: Limestone rock is mined on the 6 claims located a year ago, south of the original tract. The limestone is drilled and blasted, and then loaded with an electric shovel into trucks, which haul it to a crushing plant about 1/2 mile away.

Equipment used in the quarry is as follows: - 1 electric shovel
3 Euclid trucks of 15 to 18 tons capacity
1 bulldozer
1 wagon drill
1 air tract drill

Crushing: The trucks, which haul the rock from the quarry, dump into an ore bin at the plant. From the ore bin, the rock drops into a jaw crusher and is crushed to 6 to 8 inches. From the jaw crusher, the rock is carried on a conveyor belt to a hammermill which crushes it to minus 1 1/4" size. From there the ore is conveyed by conveyor belt to a screening plant.

Three sizes are obtained from the screening plant.

- (1) +3/8" and -1 1/4" size drops into a storage bin and is used for making lime.
- (2) +3/32" and -3/8" size is conveyed to a stockpile and is sold to the State, County and City of Douglas, for use on road construction.
- (3) The fines (-3/32") are dumped on another stockpile, from where it is shipped to Phelps Dodge smelter, where it is used as flux.

Processing Plant: From the storage bin, the +3/8" & -1 1/4" product is hauled by truck for a short distance and is dumped on another stockpile called a surge stockpile.

From the surge stockpile, the product is transported by conveyor belts to 3 kiln feed stockpiles - 1 stockpile for each kiln.

Three Rotary Kilns (horizontal) are used for calcining. Gas from El Paso Natural Gas Co. is used as fuel for the kilns. The kilns are operated 24 hours a day, seven days a week, and have a capacity of 60 tons per day each. Only 2 kilns are operated in the 3 coldest months in the winter time on account of El Paso Natural Gas not being able to furnish as much gas at that time.

Average production of lime is about 140 tons per day (average for the whole year).

Paul Lime Plant - continued

About 5% of the product is processed again, converting it into hydrated lime, and sacked in 50# sacks.

Markets: (1) 90% of the total production is sold to the copper mines for use in their mills and smelters. All Phelps Dodge operations and also the other Arizona mining companies, with the exception of Kennecott and Inspiration, use the Paul Lime Plant product. This is all shipped in bulk.

(2) About 5% of the production is sold to the building industry - lumber yards and building materials distributors. This is hydrated lime sacked in 50# sacks.

(3) Remainder of the production is sold for road material to the City, County and State.

DEPARTMENT OF MINERAL RESOURCES

STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine Paul Lime Plant

Date Sept. 15, 1961

District Paul District, Cochise Co.

Engineer Axel L. Johnson

Subject: Mine Report. Information from Howard Ames.

Location: Sections 6 and 7 - T. 24 S., R. 26 E. About 11 miles west of Douglas, and about 1/4 mile south of Highway #80.

Owners: Paul Lime Plant, Inc.

Paul Spur, Douglas, Arizona P.O. Box 1060, Douglas, Arizona

Howard Ames, Jr., Gen. Mgr. P.O. Box 1060, Douglas, Arizona ALJ WR 1-15-62

Operators: same as above

Principal Minerals: Limestone Rock

Present Mining Activity: Manufacture of lime. Limestone rock is excavated from a lime quarry and is then processed in a plant by means of crushing and calcining equipment. A total of 62 men are working - 12 men in the quarry, 39 men in the plant, and 11 men in the office and on supervisory duties.

Active Feb. 1962

Active Mine List Oct. 1962 - 60 men

Active Mine List Oct. 1963 - 60 men

Information from MINE INSPECTOR'S OFFICE - August 15, 1957

PAUL LIME QUARRY, Paul Spur COCHISE CO. 4-11-57
Owner - Alfred Paul Jr. & W. P. Ames
Oper. - Paul Lime Plant
Pres. Alfred Paul Jr., Paul Spur P.O. Box 1060, Douglas, Arizona
Supt - C. T. Bishop, " 1-15-62

LIMESTONE - 18,000 tons 15 men.

L.A.S.

This property active July, 1957, Sept. 1958, Feb. 1959, Oct. 1959,
Feb. 1960, Sept. 1960, Feb. 1961

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine Paul Lime Plant

Date Sept. 10, 1952.

District Paul District, Cochise Co.

Engineer Axel L. Johnson

Subject: Mine Report ----- Personal Inspection.

Location Sections 6 and 7 --- T 24 S --- R 26 E
Located about 11 miles west of Douglas, and about 1/4 mile south of
Highway # 80.

Owners Alfred Paul, Jr., Paul Spur, Ariz.
Winifred Paul Ames, Paul Spur, Ariz.

Operators Same as above.

Officers Alfred Paul Jr., Manager, Paul Spur, Ariz.
John H. Van Houten, Supt., Paul Spur, Ariz.

Principal Minerals Limestone Rock.

Number of Men Employed A total of 44 men employed. Of these, 5 men are in the quarry, 35 men in the plant, and 4 men in the office.

Production Rate About 400 to 450 tons per day --- 6 days per week-- of limestone rock. Production varies according to requirements of the plant.

Ore Values The limestone mined runs from 93 to 95 % of calcium carbonate. The limestone rock is mined selectively--- only the purest limestone being mined and sent to the plant for processing.

Ore in Sight Enough ore left in this limestone deposit to keep the plant going for several years.

Present Mine Workings Limestone rock is mined from an open quarry or pit, using a 3/4 yard electric shovel, and loading the limestone in quarry cars, which are hauled by electric motors to the plant, which is less than 1/4 mile away. Some limestone rock is sold to the Phelps Dodge Corp. for flux for the Douglas smelter.

Operations of Lime Plant Two rotary (horiz.) kilns, and 6 vertical kilns are used in calcining. The kilns are heated from 1800 to 2500 deg F., using natural gas for fuel. Limestone rock before being dumped in the kilns are crushed to the desired size by an assortment of crushers (size is from 1/8 in. to 1 1/2 in. depending on kiln used and the product desired.) After the rock is calcined in the kilns, to form lime, the product is either shipped in bulk as bulk lime, or sent to the processing plant and converted into hydrated lime, or processed lime. Shipments of bulk lime and hydrated lime total about 100 tons per day.

Past History The Supt., Mr. Van Houten informed me that the same owners have been operating this quarry and lime plant for a bout 30 years in practically the same location.

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine Paul Lime Plant

Date Sept. 10, 1952.

District Paul District, Cochise Co.

Engineer Axel L. Johnson

Subject: Mine Report ----- Personal Inspection.

Location Sections 6 and 7 --- T 24 S --- R 26 E
Located about 11 miles west of Douglas, and about 1/4 mile south of
Highway # 80.

Owners Alfred Paul, Jr., Paul Spur, Ariz.
Winifred Paul Ames, Paul Spur, Ariz.

Operators Same as above.

Officers Alfred Paul Jr., Manager, Paul Spur, Ariz.
John H. Van Houten, Supt., Paul Spur, Ariz.

Principal Minerals Limestone Rock.

Number of Men Employed A total of 44 men employed. Of these, 5 men are in the quarry, 35 men in the plant, and 4 men in the office.

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DEPARTMENT OF MINERAL RESOURCES

REPORT TO OPA ON ACTIVE MINING PROJECT

Date..... *4/19/45* ✓
 Name of Mine..... *Paul Lane Plant*
 Owner or Operator.....
 Address..... *Paul Spur, Ariz*
 Mine Location.....

Filing Information

File System.....
 File No.....
 This chart to be used for gallons of gasoline required per month.

PRESENT OPERATIONS: (check X)

Production.....✓; Development.....; Financing.....; Sale of mine.....;
 Experimental (sampling).....; Owner's occasional trip.....;
 Other (specify).....

PRODUCTION: Past and Future.

Tons

Approx. tons last 3 months
 Approx. present rate per 3 months
 Anticipated rate next 3 months
 If in distant future check (X) here

EQUIPMENT OPERATED:

Type	Quantity or Horse Power	Miles or Hours Per Month	Gallons Required Per Month
Personal Cars
Light or Service Trucks
Ore Hauling Trucks	1600
Compressors	100
Other Mine or Mill Eqpt.	2300
			4000

PRODUCT PRODUCED OR CONTEMPLATED: Name metals or minerals.

Lime & Silica

REMARKS:

Breakdown of gasoline supplies requested indicated on attached application with 2000 gal previous abstract unused

ARIZONA DEPARTMENT OF MINERAL RESOURCES

By.....

George A. Callan

FILE

Handwritten initials

RECEIVED
FEB 12 1986
DEPT. OF MINES &
MINERAL RESOURCES

**PAUL
LINE**

ARIZONA DEPT. OF MINES & MINERAL RESOURCES
STATE OFFICE BUILDING
16 W. CONGRESS, ROOM 1611
TUCSON, ARIZONA 85701



INTRODUCTION

America has long depended on Arizona for copper. For nearly a century, Arizona's copper industry has depended on Paul Lime. Since 1911, Paul Lime has been serving the Arizona copper industry with quality products, state-of-the-art technology, and a spirit of cooperation.

Today over half of the 15 regional copper mines purchasing lime for production depend on Paul Lime. In addition, Paul Lime supplies southwestern gold and silver processing companies, steel mills, construction companies, electric power plants, and sewage and water treatment facilities throughout the region.

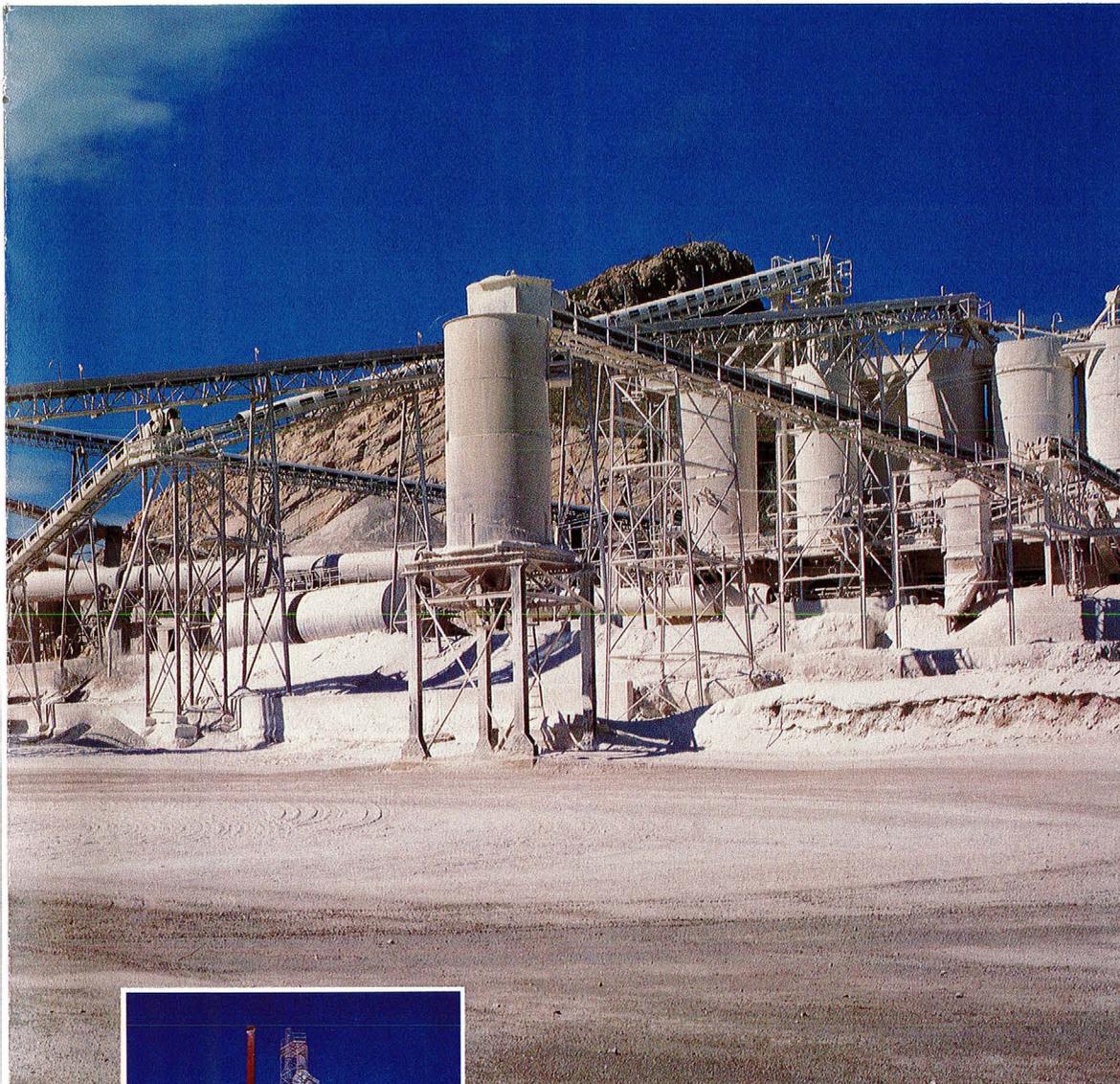
Operating around the clock, Paul Lime fills daily, weekly, and monthly orders, shipping to customers by railroad and truck. At Paul Lime, we guarantee our products. And we guarantee our customer's satisfaction. We are proud of our excellent service record, and proud of our contribution to the industries that have been so much a part of our nation's growth.

A panoramic view of the modern Paul Lime processing plant. From left to right are the verticle kiln, rotary kilns, lime storage and the truck load-out facilities.

PAUL LIME

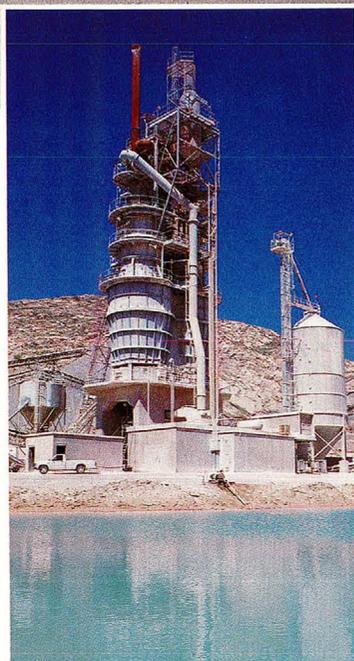
Around the turn of the century, as the demand for copper increased, mining and smelting operations were established in Southern Arizona creating an urgent need for limestone as a fluxing agent. To fill that need, Alfred Paul Sr., a pioneer industrialist, established the Paul Lime Plant—a combination limestone mine and lime production facility—initiating an industrial partnership from which Arizona would emerge as one of the world's leading producers of copper.





Paul Lime began mining limestone in 1911 and calcining lime in 1913. Mr. Paul developed his mine and built his processing plant at the base of a large rise of exposed Mural limestone. The plant was ideally situated within twelve miles of America's most prolific new copper mine at Bisbee, Arizona, and within eight miles of a new copper smelter at Douglas, Arizona. In the years that followed, Paul Lime expanded constantly to keep pace with copper's ever-increasing demand for lime.

Today, open-pit mining operations and the sophisticated Paul Lime kiln system yield 3000 tons of raw stone and 1000 tons of industrial grade lime each day.

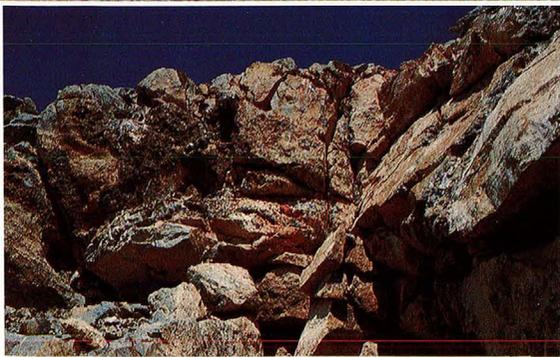
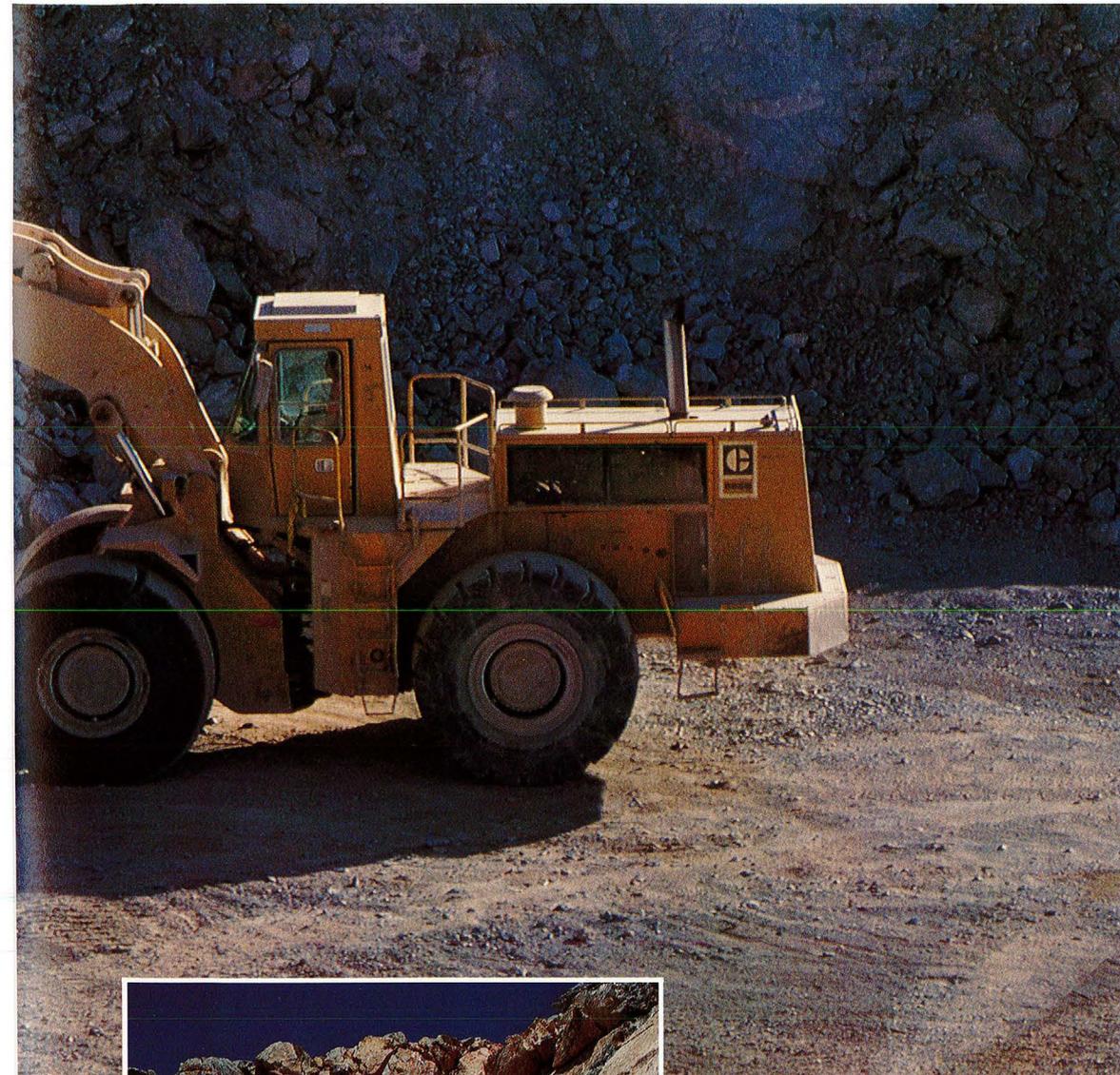


High calcium limestone is loaded into haul trucks for transport to the crushing and screening plant.

A LAND OF WEALTH

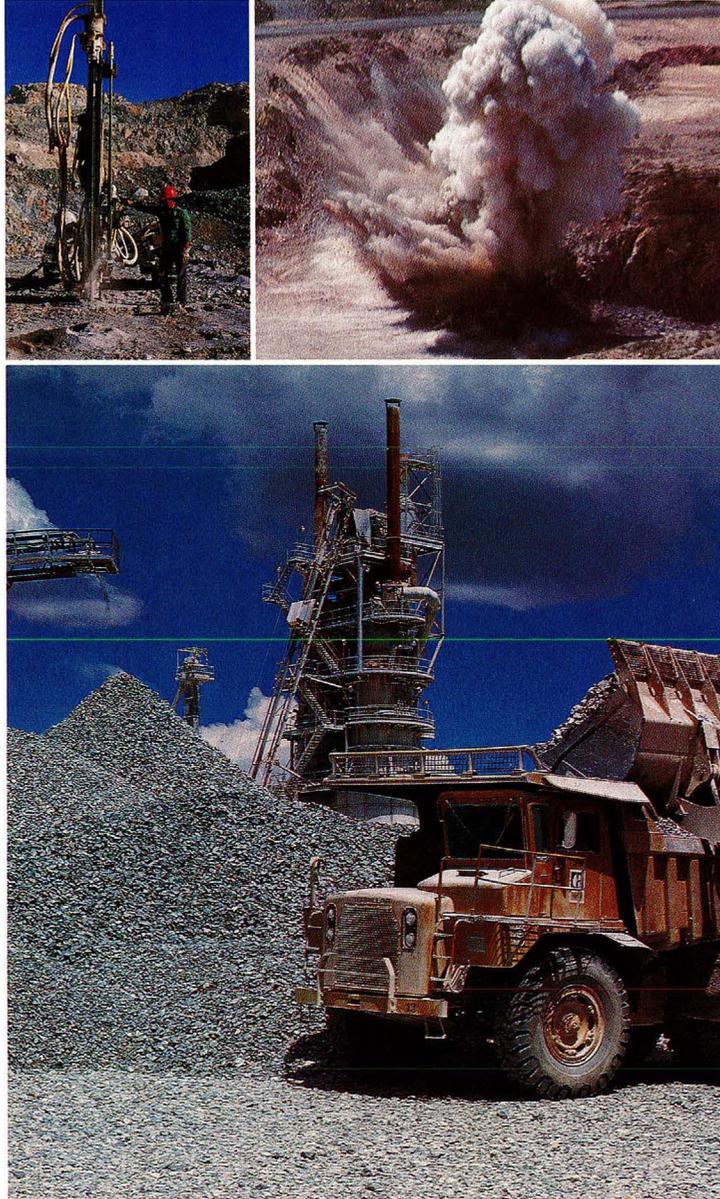
In Southeastern Arizona, located conveniently near rich copper deposits, Paul Lime has acquired massive limestone deposits. These deposits, no less than 110 million years old, yield a small crystal limestone of exceptional mechanical strength. This stone, nearly free of impurities, is well suited for lime production. Based on the current 500,000 ton yearly mining capacity, geologists estimate local reserves extending well into the next century.





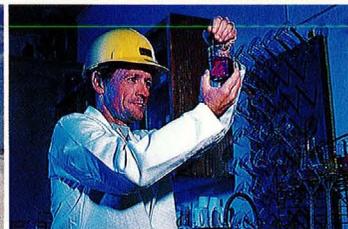
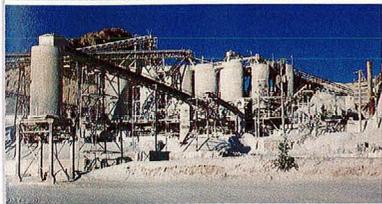
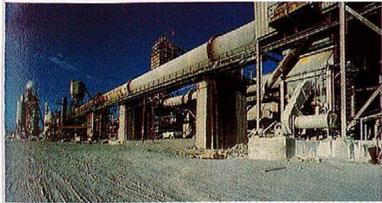
PRODUCTION

At Paul Lime, each production step requires precision, expertise, and attention to detail. Beginning at the quarry, miners prepare the raw stone for blasting. The stone is drilled in an 8 by 8 foot pattern to a depth of 40 feet. The holes are then packed with blasting agents. A 12,000 ton shot is put off twice each week to break the rock from the quarry face. The rock is then loaded into trucks by a wheel loader and transported to the apron feeder which feeds the primary crusher and scalping screen. Subsequent secondary screening isolates kiln feed stone, crushed rock, and fluxing material while the remaining oversized stone is reprocessed in a closed-circuit conveyor system to a cone crusher.



After screening, the kiln feed stone, crushed aggregates, and fluxing materials are conveyed to their respective storage piles. At Paul Lime, two rotary kilns and a parallel flow, regenerative shaft kiln comprise a highly sophisticated energy efficient calcining system with a capacity yield of 1000 tons of lime per day. The shaft kiln, producing 450 tons daily, requires roughly half the energy of its rotary counterparts. The technical sophistication and relative economy of this system help Paul Lime produce a cost effective and consistently superior product.

Regular product analysis is a basic part of quality assured production. At Paul Lime, laboratory technicians run daily composite tests for reactivity and available Calcium Oxide on samples from each production shift. Tests for loss on ignition, available lime, total lime, insolubles, and reactivity are among the rigorous quality control standards imposed on production to ensure our customers of the highest quality products.



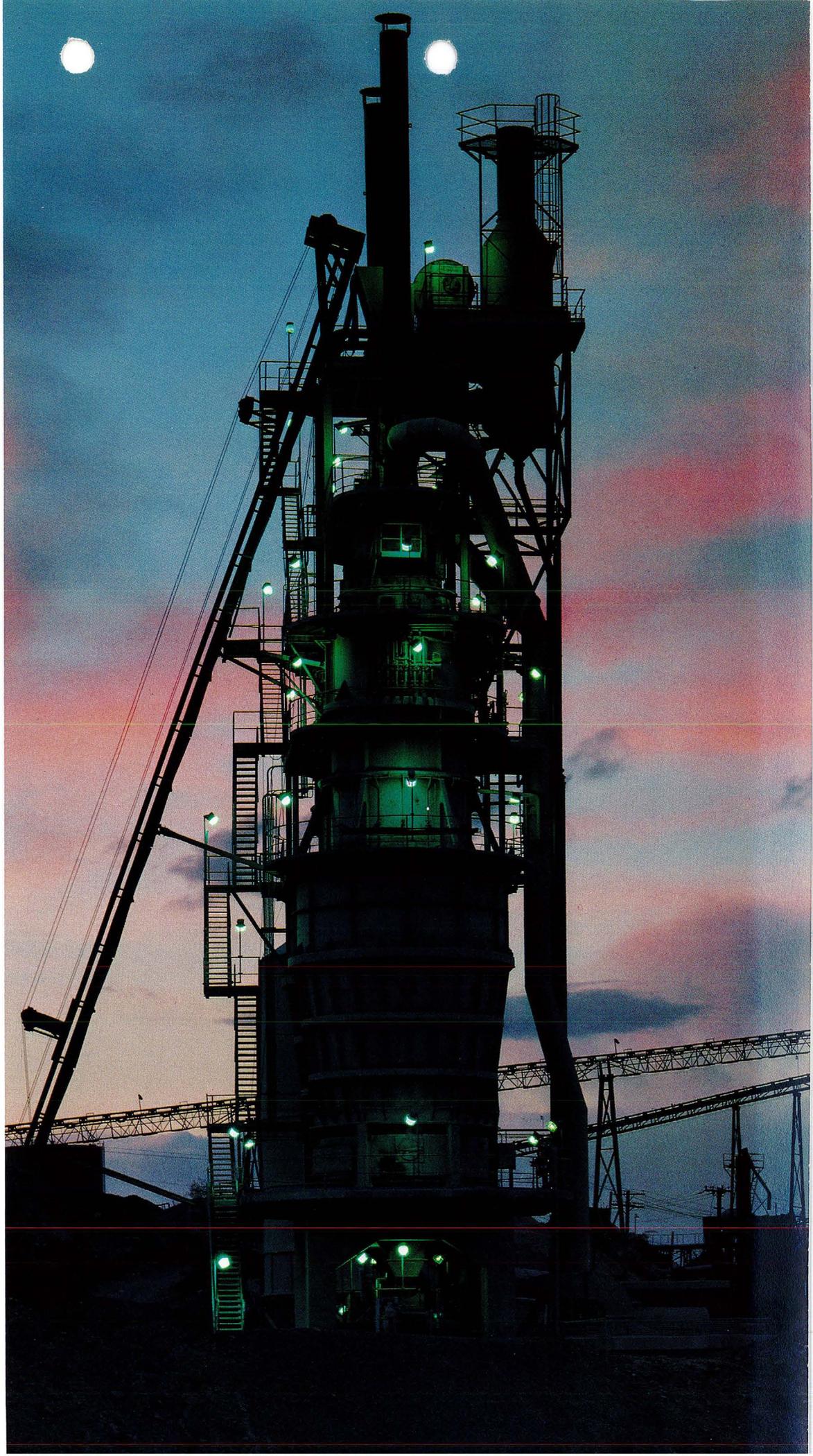
THE PRODUCTS

Paul Lime produces flotation lime for the copper industry, fluxing lime for the steel industry, and chemical lime for water purification and air pollution control. Paul Lime also supplies flux stone for the copper smelters and crushed stone for roads and construction. Paul Lime's soft-burned, highly reactive lime has an average available Calcium Oxide content of 90% with a slaking rate well in excess of 40° Centigrade in three minutes. Paul Lime's crushed stone products meet or exceed the standard set by A.S.T.M. for construction materials and the American Railroad Engineering Association specifications for railroad ballast materials.



THE PAUL LIME COMMITMENT

Like the copper mines, we have made dramatic progress since our sledgehammer and wheelbarrow beginnings. Our growth has been guided by innovation and a desire to serve our customers. And our commitment has never changed: High Quality Products and Exceptional Service. These are the standards by which we have earned our reputation. Paul Lime: the most consistent and dependable supplier of top-quality lime products in the Southwest.



A MEMBER OF THE BRENT GROUP

Sales Office: 2302 East Speedway, Suite 208, Tucson, Arizona 85719 (602) 325-1501
Plant: P.O. Drawer T, Douglas, Arizona 85608 (602) 364-2429