# ARKANSAS SILICA 99 PER CENT PURE

Gazette (?)

## Mined in Benton County, Is in Demand as Paint Filler.

## PLANT ONLY YEAR OLD

**Produced by Arkansas Capital, Substance Also Has Variety of Other Uses.**

By Fletcher Chenault.
(Staff Correspondent of the Gazette.)

Rogers, Aug. 22.—There are times in the course of human events when the quizzical reader craves to know what it is all about, and it is not always good policy to make sport of this insatiable but commendable greed for reliable information.

His thirst for knowledge may lead him to inquire, for example, where may be found the best grade of silica on the prosperous globe, and the only answer to that is the third state in the alphabetical list of states, or to be more specific, Benton county, Arkansas.

Yes, it grades 99.6 per cent pure and no doubt, like a certain brand of soap, it floats. It covers an area of 80 acres about 25 feet deep, which means that, in round numbers, here is enough silica for the ordinary uses of mankind for many years to come.

This silica, which is almost pure enough to be classed as perfect, is mined, milled and shipped by the American Silica Company of Rogers, a local organization, and local capital is used to distribute it in three grades to many of the large cities of the United States, an Arkansas product in demand for many purposes, but mostly as a filler for paints.

**Is Found Near Rogers.**

The raw material is found five miles east of Rogers. It reaches the mill in white lumps very much like unslaked lime. It goes first into a crushing mill and then into a 48-foot oil burner, where it is heated to a temperature of 40 degrees for 30 minutes. Conveyer belts transport it to a French pebble grinding machine, where pebbles in revolving drums, grind it to the consistency of flour. Upstairs, this silica, which is so much like flour in appearance, is separated into the three marketable grades. The first grade passes through a 325 mesh, the second through a 200 mesh, and the third is the coarse residue.

If you are not temperamental it will not astonish you to learn that of such material false teeth are made, or that it is used in making tooth paste, cleansing powder, art tile, porcelain and many other articles. It is not used in making glass, because a different grade of silica, known as glass sand, is more in demand. It serves the purpose equally as well and is cheaper.

Here is an Arkansas product made merchantable entirely with Arkansas capital. S. G. Parsley of Rogers is president of the company, and W. J. Belt is manager. The plant was built about a year ago at a cost of approximately $60,000

**Five Men Operate Plant.**

As an evidence of the value of modern equipment, the silica is not touched by human hands from the time it enters the receiving hopper until it emerges from the discharging hopper. The plant is electrically equipped and supplied by the Southwest Power Company, with headquarters at Fayetteville. Only five men are needed to operate the entire plant.

Arkansas raw material, Arkansas labor, Arkansas capital and Arkansas power! What better evidence of a legitimate method of building up the state's industries and reclaiming the state's resources?

Sand is a valuable product if it does not get into your eye or the picnic lunch, and Arkansas sand ranks with the best. Perhaps you have heard of the famous glass sand near Guion and near Benton, but it is not common knowledge that Benton county has silica which assays 99.6 per cent pure.

Trail along with little Alice in Wonderland and eventually we shall see Arkansas first—which is as it should be.

## Arkansas Sands Are Tested at Cornell.

Gazette 12-8-27

Sands from various parts of Arkansas are being tested in the mineral laboratories of Cornell University at Ithica, N. Y., to determine if they have any export value as moulding sands, G. C. Brunner, state geologist, said yesterday. Tests are being made under the auspices of the Committee on Moulding Sands of the American Foundrymen's Association. Inquiries to foundrymen in this state indicate that local sands are used almost exclusively and that they are found to be very satisfactory. The Silica Products Company of Guion, Izard county, is the chief producer of commercial sand in the state and ships large quantities to other states.

# $750,000 SILICA FIRM ORGANIZED

## Plant to Be Built at Rogers for Developing Arkansas Deposits.

10-18-28

Special to the Gazette.

Rogers, Oct. 17.—Announcement made recently that articles of incorporation had been filed under the laws of the state of Delaware by the Corona Silicia, Inc., Rogers, Ark., with $750,000 capital stock, created little interest to the general public, but to the industrial world it has been of genuine importance to learn that in Arkansas vast beds of diatomaceous earth are said to lie undeveloped.

That the company is a closed corporation with no stock to sell is of special significance, and within the last week H. R. McKnight of Tulsa, Okla., president of the company, formerly connected with the Tri-State District Lead and Zinc Company (Kansas, Missouri and Oklahoma), with P. W. Gooch of St. Louis, assistant to J. B. Hilton, industrial commissioner, have been here to look over a right of way along the Frisco railroad for a track for the mine of silicia located five miles east of this place, owned by the Corona Silicia Company, to a mill that is to be built within the next six weeks, adds interest.

Engineers from the Southwestern Engineering Corporation of Los Angeles, and the vice president and secretary of the Metallurgists and Mining Engineers of America have also come here recently to consult with the local officials of the company and are said to be lending their aid and support in the initial development of a silicia bed which assays 99 per cent diatomaceous earth with the supply said to be practically inexhaustible.

**Discovered Three Years Ago.**

Silicia was discovered in this section about three years ago, in a territory four miles from here, the purity of which, it was said, made the production profitable. A company of local stockholders was formed, a mill built and operations begun, but for some reason dissention arose among the officials and stockholders, and after some months the plant closed. It is known that orders were not lacking and some were filled. The real reason for cessation of the work is not known to those not connected with the company.

Now comes the Corona Silicia Company, who claim it is backed by all the money they need from Eastern capitalists and from Oklahoma. Certainly they are asking for nothing in financing the preliminary work, which has been going on since June, or in the purchase of a large tract of land east of Rogers, on which the company has opened a number of prospect banks, one of which has been drilled through 60 feet without having reached bottom.

After Mr. Gooch of the Frisco railroad, who stated to a Gazette reporter that he was sent here solely to be of assistance in the matter of transportation, as the railroad company is interested in any other industrial project; G. R. Saunders of Tulsa, engineer employed by a well known oil company, and who, according to McKnight, will become connected with the new organization, arrived here.

**To Build Mill in Rogers.**

The mill will be built in Rogers and a railroad, 42-inch gauge track, with a 15-ton locomotive and a capacity of 300 tons daily, will connect the mine and mill. Electricity will be used wherever possible, so that the cost of operation will be cut to the minimum. The mill will be modern throughout. The Danish ball process has been planned so that the silicia may be ground find enough for use in cosmetics and coarse enough to be used in silicia gel. Screens of 80 mesh up to 400 mesh are to be installed.

Some idea of the demand for pure silicia is gained by the fact that one well known rubber company who manufacture automobile tires uses 30 tons, a full carload, of silicia each day in making the filler in tires. Enamel and paint companies use large quantities, with its use in the manufacture of electrical insulators consuming vast quantities.

But the comparatively new field for the use of silicia is in silicia gel. One example that was given considerable publicity last August in the use of silicia gel was the refrigeration of a car of fish iced by silicia gel and transported from Groton, Ct., to Fort Worth, Tex., a nine-day run, when the car maintained an even temperature of 12 to 13 degrees throughout the journey.

**Used in Air Cooling Systems.**

The same gel is being used with success in the cooling of hotels, apartment houses, grocery stores and theaters. A contract was recently closed for a silicia gel air conditioning plant for a theater to seat 6,000 people in southern California. There is a wide field in which the uses of silicia gel are being brought out in the dehydrating of air blasts and furnaces. Imagine being able to maintain an even temperature in one's home during the summer as well as winter months!

**INCORPORATION MATTERS.**

The Corona Products Company, Inc., of Rogers, a mineral concern, filed articles of incorporation in the secretary of state's office yesterday, giving the capital stock as $25,000 and incorporators as O. F. Mayfield of Rogers, R. C. Jones and A. E. Arthur of Cushing, Okla. 12-12-30

## Silica Deposits, Near Everton to Be Developed.

Special to the Gazette. 4-5-31

Harrison, April 4.—Plans for construction of a plant for the development of silica, used in glass manufacture, at Everton, 15 miles southeast of Harrison, are being made by the Silica Products Company, now operating at Guion. It is expected the new plant will be in operation in a few months.

D. D. Dunkin, head of the Silica Products Company has moved his residence to Harrison and established an office here. Adjustment of freight rates on the class of tonnage offered by the Everton development is being sought.

The company plans to ship upwards of 3,000 tons of sand a month after its Everton plant is completed.

## New Freight Rate on Silica Sand Fixed.

**The Arkansas Railroad Commission issued an order yesterday, in conformity with a ruling of the Interstate Commerce Commission, fixing the freight rate on silica sand the same as the current rate on sand and gravel when transported in open cars. Rates when transported in box cars were set forth in a schedule, ranging from 64 cents a ton for the first 10 miles to $2.83 a ton for 440 to 470 miles.**

**The case was heard co-operatively by the I. C. C. and state commissions of Arkansas, Oklahoma, Texas, Missouri and Kansas. Commissioner Ed Harper represented the Arkansas commission at the hearings. Silica sand, produced in certain sections of northern Arkansas, is used in the manufacture of glass and must be kept free from cinders and foreign substances while in shipment. It was said shippers probably will adopt a system of covering open cars with tarpaulins to obtain the benefit of the lower rate. The order will become effective October 15, or may be put into effect before that date upon 30 days' notice to the commission.**

## Sand Quarry Being Opened at Everton.

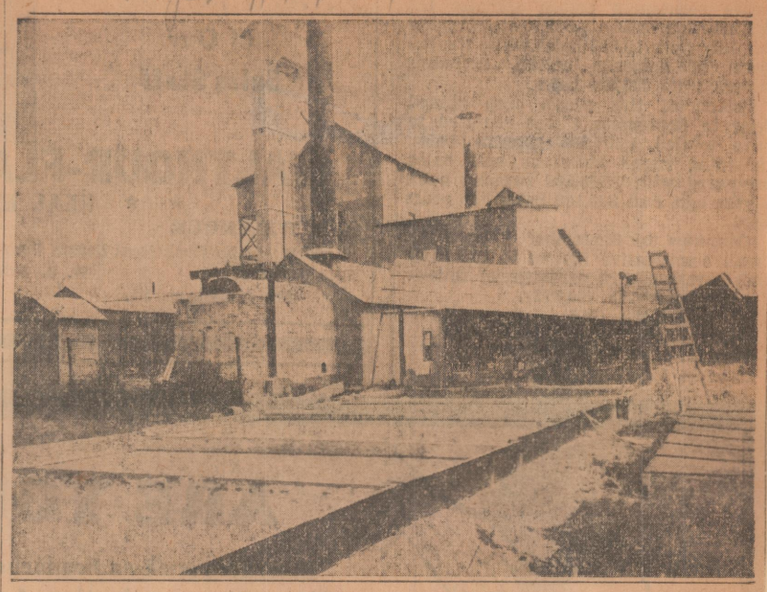
4-3-32

Special to the Gazette.

Everton, April 2.—The Silica Products Company is opening a big sand quarry and installing a sand mill here. The concern specializes in glass sand, and has been a heavy shipper from Guion, Izard county.

# *Mine Near Rogers Source of New Type of Construction Material*

Sept 9 1934



Refinery plant of the Corona Products, Inc., Rogers, where silica is refined for the market.

Gazette

## Opalite, a Silica Product poration, Found Usefu and for Otl

Rogers, Sept. 8.—This section of the Ozarks, about 200 miles northwest of Little Rock, has long been known as a delightful country in which to spend a summer vacation and also as a farming community where grapes and other fruits are raised in abundance. The country abounds with springs of crystal clear water and it is said that the Indians knew of the curative properties of these waters and made their camps in these hills.

Evidence has been discovered that the flint that is so plentiful in the Ozarks furnished the material from which the Indians made tips for their arrows and spears, as well as the rock out of which they fashioned their tomahawks and axes. This flint or chert has been identified by the geologists as of Mississippian age and is known as the Boone formation.

This formation consists of a series of alternating limestone and cherts having an average thickness of 350 feet. The Boone represents the Kinderhookian, Burlington, Keokuk and basal Warsaw stages of other regions.

Flint is a very compact, dark gray, silicious rock. Chert is an impure flint, usually of light color. These rocks do not in most cases form extended independent beds, but occur chiefly in limestones in the form of irregular masses of the silicious part of various sea animals, particularly sponges and protozoans. The silica was taken from sea water by such animals, and at their death formed deposits, often scattered through other sediments.

**Chert Subsequently Decomposed.**

Subsequently the chert has been decomposed by ground waters and near Rogers a deposit of reworked silica formed by this method is being mined and milled and the product is being used as an admixture in concrete as well as for the manufacture of paints, hard rubber, enamels, electric insulators, foundry moulds, mud weighting regent in rotary drilling wells and even cosmetics.

The deposit is owned by Corona Products Inc., an Arkansas corporation which has been operating since 1929. The mine is about four miles south of Rogers, where the company has a mill for grinding and preparing this material for marketing under the trade name of "Opalite."

This silica has a chalk-like consistency and is easily broken or cut, but upon examination under the microscope it is found to be made up of minute particles of amorphous silica.

"Amorphous" is defined as "having no determined form" and when it is remembered that silica as quartz (in which form it is most familiar as sand) is generally light colored and glassy in appearance and a crystal that is very hard, so hard in fact that it will scratch glass, it is rather surprising to learn that this material as mined near Rogers is in the silica group.

The origin of this material seems best explained by the theory that it has resulted from the decomposition of chert. Chert has been found in grading into this amorphous type of silica and the gradation has been so gradual that no line can be drawn between the two rocks.

The deposit near Rogers is found on top of a hill of some 157 acres and outcrops in the ravines on the slopes of the hill. It is covered with a few feet of overburder made up of weathered material. At this time it is being mined through a shaft sunk into the deposit about 25 feet, with several drifts leading from this shaft at a point about 18 feet below the surface.

**2,500,000 Tons Blocked Out.**

The drifts are from eight to 12 feet high and merge into each other forming big rooms with pillars at intervals supporting the roof, all of which is in this amorphous silica, and it is estimated that there is approximately 2,5[illegible] 000 tons of this material blocked out by drill holes. The Southwestern Engineering Corporation of Los Angeles, Cal., which surveyed and checked the deposit, estimated that 10,000,000 tons is available but not entirely blocked out. The test holes show that the deposit is 10 to 85 feet thick.

The material found in the mine contains about 20 per cent water and owing to its peculiar characteristics it has been found necesary to keep additional water at the point of the drill to prevent the silica from forming a jelly like mass.

Light charges of dynamite are used to break down the earth and, if it is desired to break it into large lumps, a 20 per cent dynamite is used. If the material is required in a finer size, 50 per cent dynamite is used. When the higher per cent dynamite is used it has been noted that a great deal of this jelly-like material has been formed, presumably due to the vibration set up in the formation from the heavier charge.

This theory is confirmed in some extent by the fact that in transporting the material over the mountains it has been noted that if the truck is driven rapidly and the road is particularly rough part of the material will be jelled in the truck. The moisture content of 20 per cent as found in the mine, will account for the water needed for this jellification as the silica is very porous and it seems probable that part of the water will shake out of the upper part of the truckload and concentrate in the bottom layers.

**What Analysis Shows.**

The R. W. Hunt Company of Chicago has analyzed this material and finds the following component parts:

| | Pct. |
|---|---|
| Silica (SiO2) | 99.50 |
| Iron Oxide (Fe203) | 0.045 |
| Aluminum Oxide (A1203) | 0.10 |
| Calcium Oxide (CaO) | 0.005 |
| Magnesium Oxide (MgO) | 0.10 |
| Loss by ignition | 0.25 |
| Total | 100.00 |
| Specific gravity | 2.655 |
| | Volume Pct. |
| Absorption test water | 32.00 |
| Absorption test mineral oil | 41.00 |
| Absorption test vegetable oil | 34.00 |

The material is hauled from the mine to the mill by truck. One truck will transport about 40 tons of the material in an eight-hour shift. A road has been constructed by the Corona Products Company from the mine to the county road leading into the town.

The material is first hand-shoveled into a tube or pebble mill where it is wet-ground to a fine mesh.

This grinding is done by filling the mill, which is lined with silica bricks, with silica pebbles and adding water and rotating the mill which is mounted upon steel tires that rest on steel wheels or rollers. The power is furnished by an individual electic motor and tube mill drive is effected by the Texrope drive.

**Flow Determines Grade.**

The ground product is next elevated by a Wilfrey sand pump to a set of settling tanks or vats where several grades of material are made depending upon the velocity of flow of the water across these vats. The material is dried in these tanks to a moisture content of about 10 per cent by means of steam coils in the bottom of the tanks and from these tanks the material is conveyed to a Louisville steam dryer where

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the moisture content is reduced to one or two per cent.

From the dryer the product is elevated to bins and from the bins it can be sent to either a Gayco air separator, where the air-blown finished product is made, or to a set of Hummer screens, where several different size products are made.

The air blown material can be made from 325 mesh to 600 or 800 mesh, while the screened materials will vary in size from 20 mesh down to 200 mesh. All materials sold for concrete admixture is finer than 300 mesh.

Opalite is sacked by the use of a Bates value bag packer which is automatic and weighs the material in 50, 80 and 100-pound bags.

Each machine in the mill is driven by its separate electric motor and the plant is so designed as to permit of any one of the several products being made as desired.

Opalite is also being sold as a pigment for paint and for this purpose must be a very fine material of smooth texture and these same qualities are needed in an admixture for concrete.

**Tests Conducted.**

Tests have shown Opalite capable of increasing the crushing strength of concrete up to as high as 40 per cent and at the same time give the mix greater workability and suspend the aggregate in proper position and produce a more dense and waterproof concrete.

Opalite mixed with water to the consistency of cream will string from a spatula held at a height of about 30 inches above the mixing vessel without breaking and has the same appearance as a good grade of lubricating oil. It feels sticky and can be rubbed between the fingers until the moisture is driven out when it again becomes a soft powder.

From its geological history it would seem that the original silica was first taken into solution in the sea water and extracted from that water by the diatoms that inhabited the sea, and deposited as chert. This chert was then again dissolved by ground waters and this bed of material is the silica portion of that rock. So, from a crystalline form the silica has been changed to an amorphous form of the same material, and very finely subdivided in the process of changing.

Further proof of this theory seems to be given by the discovery of arrowheads and tomahawks composed of material similar to opalite buried under a few feet of soil near Seneca, Mo., located in the southwest corner of that state and not very far north of Rogers.

This find is described in Oklahoma Geological Survey Bulletin 28, prepared by E. S. Perry, which states that these arrowheads and tomahawks show a decided concoidal fracture which is so characteristic of chert that it seems almost positive evidence that they were originally made from chert or flint and buried in the soil where the change took place.

It hardly seems reasonable to assume that the Indians would have made arrowheads or tomahawks out of this very soft rock and carefully buried them. If they had been made from amorphous silica and left exposed to the weather, it is more than likely that they would have been destroyed. Further, the surface of these relics as well as the sharp edges show that they were not polished or ground and it is not possible so to handle this amorphous silica and produce the same effect. All of which seems to indicate that chert can be changed by this weathering process and is conclusive evidence of the origin of the commercial deposits.

**Used in Texas.**

Opalite Admix was used in the recently completed Beaumont city reservoir with excellent results, leaving the concrete waterproof, with no hair checks and giving the concrete a whiter appearance.

It was used in the construction of the barracks and several other buildings in Fort Sam Houston, at San Antonio, to the satisfaction of all concerned.

The Alamo Downs stadium in San Antonio called for a high early strength ncrete, but opelite was used instead cause of its high seven-day strength, quite a saving to the contractor, d at the same time it went far toards beautifying the structure and aking it a better job.

In some instances contractors have und it useful in saving cement in preference to building stronger concrete. This has worked out very satisfactorily since opalite adds sufficiently to the workability of the mix that the reduction of cement was not harmful. This is possible from an economical standpoint since opalite is only used in four to six per cent by weight of cement.

Apparently the increase in strength made by opalite is largely due to the water cement ratio, since opalite absorbs 51 per cent by weight of water from the mix and due to unusual colloidal action of the material the workablity is not decreased as the water is absorbed but is actually increased.

Stock in the company handling this material is held largely by Oklahomans and Arkansans. Officers are: O. F. Mayfield, president, of Rogers; R. C. Jones, treasurer, of Cushing, Okla., and Mrs. G. A. Mayfield, secretary, of Rogers.

# Silica Sand Brings Boom To Everton

Gazette 4-11-37

## Industry Hums Again in Town "The Highway Forgot".

A mountain of glass has changed a mirage into a reality for "the town the highway forgot." When the Missouri & Arkansas railroad was built south from Harrison in 1901, a physician, Dr. Rich, had come to the southern part of Boone county along the route of the road and bought a farm on Clear creek. As the right-of-way was through his farm, he plotted a townsite and offered the railroad a deed to every alternate lot to build a station there. The road accepted. Dr. Rich had come from Everton, Mo., and was proud of that town. It lay in the beautiful valley of a little stream like Clear creek, and like here too, the hills were around about it. The doctor asked that the name Everton be given to the new town. So Everton it was.

The first quarter of a century in Everton's history were fat years. It was the nearest shipping point on the railroad for Western Grove, a rich and prosperous inland town in a rich farming territory. Cotton, livestock and timber came from beyond Western Grove—from Mt. Hershey, across the Buffalo river, and on back up Cave creek into Newton county. There were ore hauls from Cave creek, too, and from miles north of Everton. There was a great scope of trade territory reaching out to the northeast of Bruno and beyond.

The affluent days of the World war saw Everton's prosperity at its zenith. Trade centered there. One produce dealer shipped two cars of poultry every week. Merchants carried immense stocks of goods. Everton was called the richest "country trade" town on the railroad. There were modern stores, fine hotels and fine residences. Nearby mines were furnishing employment to many. The timber business was at its height.

Post-war deflation did not hurt Everton much. But the building of Highway 65 did. The highway missed Everton by four miles. The era of truck transportation began. Traffic that formerly came to Everton went out over the highway. Then came the depression. The spirit of hopelessness that beset the nation was here, too.

A kindly nature did not forsake "the shorn lamb." Losing some sources of revenue, nature has uncovered others. The new ones are substantial and enduring and will not pass. These new resources have been found and men of ability and vision brought to develop them. Now there is a spirit of hope in Everton again. Assurances of a growing and substantial prosperity are centered around a silica sand plant, a modern factory to be built this summer by Joe Migliore, the reopening of the zinc mines, and renewed activities by the farmers of the valley and the hills.

**Mountain of Glass.**

The "mountain of glass" is a great mountain of silica sand rock, which is being reduced and shipped to all parts of the country for use in the manufacture of glass—bottles, jars and all kinds of flat glass; for use in foundries and in making soap preparations.

The plant of the Everton Sand Company is a short distance north of the railroad depot on both sides of Clear creek. There is a veritable mountain of silica northeast of the plant. The silica sand is in hard solid rock formation and averages approximately 19 feet thick. The deposit outcrops around the edges of the mountain and very little oberburden prevails.

The bluff is drilled with jackhammers and shot with dynamite, bringing the sand down in as fine a mass as possible. The mass is shoveled into bottom dump mining cars, transported some 300 feet and dumped into the quarry bin which holds 500 tons.

The mass is then dragged from the bin to the crusher, and from the crusher it passes over screens and through successive sets of rollers and screens until the mass is reduced to grain size. An abundance of clear water is applied to the mass when it enters the crusher and on its course through the crushing plant. From the crushing plant the entire mass of water and sand is slowed down for a moment, permitting the dirty or stained water to overflow from the sand and spill down the mountain side, the sand going out of the bottom of the cleaning tank where fresh water is added and the material starts its journey down a flume to the drying plant beside a spur track of the Missouri and Arkansas railroad, being washed some 800 feet with fresh, clean water.

**Large Production.**

When the silica material and water reach the drying plant the entire mass runs into a large draining bin 10x12x80 feet, which bin the water leaves the sand. There are two of these bins, so that when the sand in one is being drained for 48 hours, the other bin is being filled. Finally the sand from the bins is dried in a large rotary drier by means of crude oil flame direct to the sand. After the sand is dried it is then elevated to the top of the storage bins, and goes through screens and directly into the storage bins, later to be spouted into paper-lined box cars for shipment.

The deposit is one of the highest grades of silicate in the central states, and there is sufficient deposit to carry on operations for many years at the rate of two or three cars a day, the present output of the plant. The silica sand operations employ regularly 30 men daily with a monthly pay roll of about $1,200.

**Pipe Industry Booms.**

Other enterprises in Everton show evidences of future prosperity. For several years Joe Migliore has operated a corn cob pipe factory at Emide, a little more than two miles from Everton down Clear creek. His corn cob pipes and factory have become nationally known. He has furnished farmers with a good revenue from a hitherto wasted product—corn cobs. He has also manufactured "jimmy" pipes from the trunks of hickory saplings. During his stay in these hills he has been at the head of many big enterprises.

Now "Big Joe," as his friends call him, has drawn plans for a big, modern factory in Everton to be built near the railroad tracks, construction work to begin in June. There will be a big Diesel engine to generate power and generate the plant's own electricity. Besides the cob and hickory pipes, the new factory will manufacture many diferent tool handles, knife and fork handles, and many novelties from the native woods.

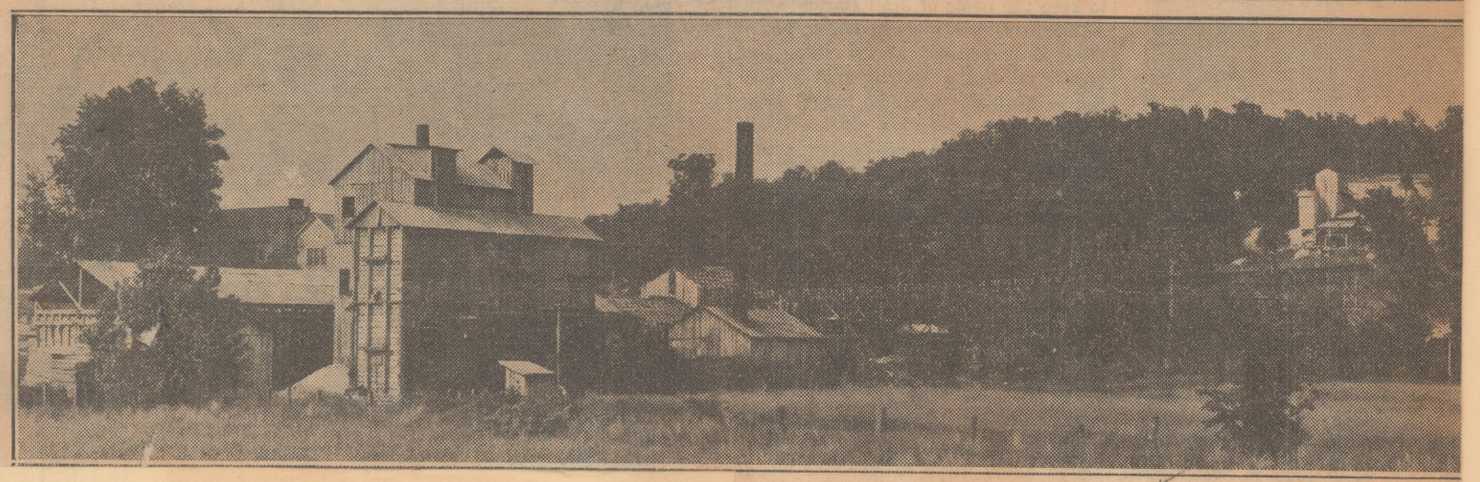
Zinc mining is coming back in the Everton field. J. C. Potts, who owns many properties in and near Everton, has leased the old Marguerite mine to Barkley Brothers from Carthage, Mo. They have several men working with hand jigs and will be shipping ore shortly.

The highway condition, which was such a drawback to Everton, is to be improved by construction under way. The project, when completed, is to be a gravel surfaced, state-maintained highway, starting from Highway 65 two miles south of Valley Springs and following the present road four miles to Everton, then on to Bruno and on to connect with Highway 14, which is the Marshall-Yellville road. Much work has been done on this project, county machinery will soon be put on, and when the grading is completed, the state highway department has given assurance that it will take over the maintenance work.

Everton folks are happy again. There is not a vacant house in the town, and new buildings are going up. One business man said: "The highway moved us out of the world for a while. Now ore and sand and corn-cob pipes have moved us back."

# *INDUSTRY LOCATED ON M. AND A. RAILWAY*

Gazette 6-20-37



Pictured above is the Everton Silica Sand Company, Inc., at Everton. This is one of the flourishing industries located on the Missouri and Arkansas railway, which has launched a campaign to develop industries of all kinds in the territory it serves.