REPORTS OF THE
DEPARTMENT OF
CONSERVATION AND DEVELOPMENT
STATE OF NEW JERSEY
HENRY B. KÜMMEL, State Geologist and Director

BULLETIN 37
Geologic Series

THE MINERAL INDUSTRY OF NEW JERSEY FOR 1930

AND PRELIMINARY ESTIMATES FOR 1931

Compiled by
MEREDITH E. JOHNSON
Assistant State Geologist

Published, 1932
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THE MINERAL INDUSTRY OF NEW JERSEY FOR 1930 AND PRELIMINARY ESTIMATES FOR 1931

By MEREDITH E. JOHNSON

Assistant State Geologist

INTRODUCTION.

This bulletin is a continuation of the series devoted to the mineral industries of the State of New Jersey which is published by the Division of Geology and Topography of the Department of Conservation and Development. It contains brief descriptions of new industries, of changing methods of production, of economic factors which affected the mineral industries in the year 1930; and for each industry it gives the final statistics of production and sales in 1930 collected and compiled by the Department of Conservation and Development in co-operation with the Bureau of Mines and the Bureau of the Census of the United States Department of Commerce. It differs from previous bulletins of the same series in that preliminary estimates are also given for the following year—in this case 1931. Whatever value the compiled totals may have is due to the willingness of the mineral producers of this State to co-operate with the above-mentioned agencies in times of stress as well as in times of prosperity. For their hearty co-operation the writer wishes to express his own deep appreciation.

The policy of printing the information obtained from mineral producers so as to conceal the amount and value of individual production remains unchanged. This means that for those industries in which there are less than three producers, the figures of production and sales are combined with those of one or more other industries unless specific consent is given to publish them seperately.

SUMMARY OF THE MINERAL PRODUCTION IN 1930.

The deflation of industry which began in 1929, and which continued with little check throughout 1930, had a marked effect upon many of the mineral industries of New Jersey. Though production—geared up to high speed in 1929—was in many industries slowed down 20 to 30 per cent, it failed to keep pace with the decline in consumption. Consequently the mounting stocks of raw materials accelerated the decline in prices which even without that stimulus would probably have

been severe. As a result the year closed with mounting stocks of raw materials, prices 25 per cent or more lower than in the preceding year, and with no indication of any turn for the better.

A glance at the tabulated statistics accompanying this text shows that in New Jersey the iron industry was the only one of the important mineral industries to show an increase in production over that in 1929. This rather surprising achievement was brought about largely through the re-opening of two mines that had been idle for a number of years. But even without their added production there would have been a small increase in the total production from the other active mines.

As shown in the table, the total value of all mineral production in New Jersey in 1930 amounted to $66,485,663, a respectable total for a small state, but a decline of $14,664,659, or 18 per cent from the total for the previous year.

MINERAL PRODUCTION IN NEW JERSEY IN 1930 AND 1929

Products	(a)	*Quantity short or long tons* 1930	1929	*Value-dollars* 1930	1929	*Per cent increase or decrease* *Tonnage*	*Value*
Zinc ore	1	773,197 s. t.	789,552 s. t.	(b)	(b)	—2.1	—19.1
Iron ore (shipped)	6	391,528 l. t.	285,317 l. t.	1,632,827	1,159,206	+37.2	+40.8
Stone	45	2,702,560 s. t.	2,815,259 s. t.	3,909,281	4,338,955	—4.0	—9.9
Sand and gravel	107	5,969,479 s. t.	6,721,498 s. t.	5,009,866	5,585,285	—11.2	—10.3
Clay (sold raw)	35	170,286 s. t.	244,258 s. t.	713,136	1,023,803	—30.3	—30.4
Brick and tile	74			15,363,183	19,112,238		—19.6
Pottery	58			14,456,246	19,598,651		—26.3
Greensand marl	5	12,761 s. t.	13,016 s. t.	224,871	253,180	—2.0	—11.2
Feldspar (ground)[c]	4	14,784 s. t.	22,764 s. t.	276,626	434,095	—35.1	—36.3
Other products:							
Lime	1						
Portland cement (shipped)	2						
Pulverized sand[d]	6						
Zinc ore	1			24,899,627	29,644,909		—16.0
Talcose rock (ground)	1						
Non-clay refractories and refactory cements	4						
By-product coke[c]	2						
Total value				66,485,663	81,150,322		—18.1

a. Number of mines, quarries, pits, or plants as the case may be.
b. Value included in "Other products."
c. Raw material from other states.
d. Part of raw material from other states.

DETAILS OF THE PRODUCTION IN EACH INDUSTRY.

ZINC.

Consumption of zinc in the United States declined at a rapid rate in 1930—more rapidly than the output of domestic mines. Exports decreased nearly 50 per cent, whereas imports from Mexico increased largely. Because of these conditions, stocks of zinc accumulated rapidly and the price of zinc in the latter part of the year was forced to lower levels (4.1 cents a pound at St. Louis in October and again in December) than any seen in thirty years. The year closed with stocks of zinc nearly double those at the end of the preceding year—a condition which fore-shadowed the still lower prices of 1931.

Production from the mines of the New Jersey Zinc Company at Franklin and Ogdensburg was maintained at a fairly high level, the total production for the year 1930 being approximately 2 per cent, or only 16,355 tons less than in the preceding year. Figures for 1931 are not as yet available but it is known that there was a further reduction in output with an increase in the efficiency of operations.

The close of the year 1930 saw the retirement of Mr. R. M. Catlin who for more than 20 years was superintendent at Franklin and who was responsible for the introduction of an orderly system of mining by stopes in place of the former unsystematic methods. It is greatly to the credit of Mr. R. L. McCann, his successor, that he has been able to step into office in these difficult times and promote still greater efficiency in mining operations.

The company has taken advantage of slack business to continue its prospecting for other ore-bodies in the vicinity of those it is now mining. It is known that in the latter part of 1931 cores were taken from test holes sunk in a small area of Franklin (white) limestone on the west slope of Pimple Hills and near Sparta Junction. Results obtained from this drilling have not been made public.

The large size and great value of the zinc deposits at Ogdensburg and Franklin have led other interests as well to prospect for similar, undiscovered ore-bodies. For instance, it may not be generally known that deep holes have been drilled to the north, east and south of the New Jersey Zinc Company's property at Franklin. So far as known, however, none of these attempts was successful in finding ore.

IRON ORE.

It has already been mentioned in this report that the iron industry was the only one of the major mineral industries in New Jersey to do better in 1930 than in 1929. This record is all the more remarkable in that records for the entire country show that production from all mines declined 20 per cent and shipments declined 27 per cent. Compare this

with an increase in shipments from New Jersey mines of 37 per cent and an increase in the value of shipments of 40.8 per cent. Much of the increased production was due to the re-opening of the Washington and Scrub Oaks mines by the Alan Wood Mining Company of Conshohocken, Pa. Each of these mines has had a long and varied career and a brief outline of their history may be of interest.

The Scrub Oaks Mine, situated on the west slope of the hill separating Kenvil from Dover and only half a mile north of the heavily travelled Route 6 of the State highway system, was first developed about 1860 by a series of shafts and tunnels. These disclosed the fact that although a considerable volume of iron ore was available, it was too lean to be mined profitably at that time. In the half century that followed, several efforts were made to utilize the ore, but in each case the attempt was abandoned as unprofitable after a short period of operation. In 1922 the Replogle Steel Company completed the construction of a modern mill capable of handling a large daily tonnage of ore at a low cost per ton, but conditions in the iron industry were then so unfavorable that operations were again suspended on September 30, 1923. Before resuming operations, the new operating company installed a more efficient type of wet, magnetic concentrator in the mill, which gave the desired results of a higher grade of concentrates and a greater recovery of iron. In a story which appeared recently in a trade journal, it was stated that the run-of-mine ore now analyzes only 31 per cent iron. The production of a high-grade concentrate from this ore at a cost such that it can meet the competition of other and higher-grade ore is a highly commendable accomplishment even when one takes into consideration the fact that ore from this mine is exceptionally low in phosphorus and therefore has added value for the manfacture of low-phosphorus iron.

The Washington Mine, located about a mile south of Oxford, Warren County, is even older than the Scrub Oaks Mine. Iron ore was mined in this locality as long ago as 1743, but the name, "Washington", was probably first applied to a shaft sunk in 1854. By means of that shaft a body of ore 18 feet thick and 663 feet long was mined to a depth of 100 feet; but operations were abandoned before 1868 because of the high sulphur content of the ore. In 1879 kilns were built to roast the ore and a new shaft was sunk. With one temporary shutdown the mine was then operated continually until 1895. In 1900 it was again re-opened, and in 1903 a new three-compartment slope was completed to a depth of 497 feet. Production was increased to an average rate of 100,000 tons a year and the mine was operated almost uninterruptedly until 1923. From then until November, 1929, the mine lay idle. By means of diamond drill-holes and prospect drifts the present lessors have already developed a considerable amount of available ore in addition to that blocked out by the work of the preceding operating company, the Empire Steel and Iron Company.

Other mines operating in 1930 were the Mount Hope Mine of the Warren Foundry and Pipe Corporation, the Richard Mine of the Thomas Iron Company, the Beach Glen Mine of the Eastern Iron Ore Company, and the Peters Mine of the Ringwood Company. A small shipment was made from stock at the Ahles Mine of the Basic Iron Ore Company but the mine was not re-opened.

The grade of ore shipped in 1930 ranged from 60 to 64 per cent iron, .03 to .1 per cent manganese, and .03 to .5 per cent phosphorus. All of the ore mined was concentrated before shipment.

Total shipments of ore from mines in New Jersy have been as follows:

Total shipments from 1870 to 1929, inclusive	25,004,267 gross tons
Shipped in 1930	391,528
Total shipments	25,395,795 gross tons

Preliminary estimates of total shipments in 1931 indicate a decline of about 150,000 tons as compared with 1930 and a loss in value of shipments exceeding $650,000. The Beach Glen Mine was not operated in 1931, and of the remaining mines active in 1930, only the Mt. Hope Mine was still operating in October, 1931.

STONE.

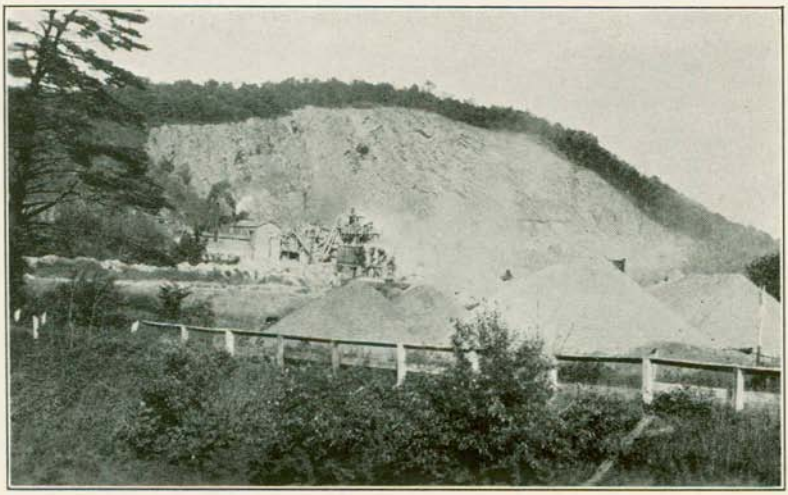
In recording declines of only 4 per cent in volume and 10 per cent in value, the stone industry gave evidence of surprising stability in the face of a marked decline in building operations. The only apparent explanation for such a record is that governmental agencies, in the effort to provide as much employment as possible, expanded their construction programs to the maximum extent. Much of this work was road-building, and as a result more miles of permanent roads were constructed in 1930 than ever before in the history of the State.

In recent years there has been a large increase in the productive capacity of many of the quarries in this State and it is believed that this potential capacity, leading to keener competition for the available business, is largly responsible for the lower prices prevailing in 1930. The conclusion seems inescapable that prices will continue to decline until some quarry operators are forced to drop out of the running and an equilibrium is again established in which normal supply is about equal to the demand.

TOTAL PRODUCTION OF STONE IN 1930 AND 1929

	No. of quarries		*Production—short tons*		*Value—dollars*	
Kind	1930	1929	1930	1929	1930	1929
Trap rock	32	32	2,412,970	2,457,610	3,313,917	3,650,332
Limestone	5	5	176,920	227,069	386,451	434,863
Other stone	8	8	112,670	130,580	208,913	253,760
Totals	45	45	2,702,560	2,815,259	3,909,281	4,338,955

(a) *View of the M. L. Kernan trap rock quarry in South Orange.*



(b) *A trap rock quarry in the western part of the State. Note the large stock piles in the foreground.*

Trap Rock. There were few changes in the list of operators in 1930. Joseph Devlin did not report any production for the year, but as an offsetting factor new production was reported from the Peter Fireman Estate at Lambertville. Although no new, large plants were built in this period, a number of operators completed changes in their plants which greatly increased their operating capacity. Also, the idea of serving the public with ready-mixed concrete, which was first adopted in the West, was used by several producers as an opportunity to obtain new business and they accordingly equipped their plants with the necessary bins and scales for such production. Experience has since shown this to be a profitable sideline—in fact some of these operators have built up such a large trade that they have found it profitable to operate sand pits as well to provide them with the necessary fine sizes of aggregate for their concrete. This is but one illustration of what appears to be a definite trend towards the integration of the building-materials industries through the consolidation or absorption of important units in the sand and gravel industry with large units in the crushed stone industry. Such combinations have been found profitable in almost every kind of business and the writer is of the belief that in time a few large, integrated firms will dominate this field as well. However, the value of sand and crushed stone is so low compared with the cost of transportation that doubtless there will always be the opportunity for small and profitable operations in districts outside of the large centers of population.

The added productive capacity in the trap rock industry resulted in very keen competition for business and although total output for the year declined only 1.8 per cent, the total value of the production declined 9.2 per cent. The curtailment of maintenance expenses by the railroads resulted in a sharp drop in sales of crushed stone for ballast, but sales for use in the manufacture of concrete held up very well and sales for road metal were actually greater than in the preceding year. year.

Detailed statistics of the production of trap rock are given in the following table.

PRODUCTION OF TRAP ROCK IN 1930 AND 1929

	Quantity—short tons		*Value—dollars*	
Use	1930	1929	1930	1929
Road metal	554,680	442,583	764,266	664,145
Railroad ballast	81,410	217,612	100,143	255,185
Concrete	1,774,790	1,792,634	2,437,208	2,722,278
Other uses	2,090	4,781	12,300	8,724
Totals	2,412,970	2,457,610	3,313,917	3,650,332

As estimated from the reports so far received for 1931, the total quantity of trap rock produced in that year was only a little less than the amount produced in 1930. A general decline of prices, however, resulted in receipts some 15 per cent lower.

Limestone. There was little change in the limestone industry in 1930. However, a new producer was added to the list when Clarence Warne of Broadway, N. J., built a plant for the production of crushed stone late in the year. The plant was located near the quarry of the Edison Portland Cement Company and beside the large mound of waste rock discarded by that company as unfit for its use. Since all of it is fresh, unweathered rock it is, however, admirably suited for the production of crushed stone.

Offsetting this new production, the plant of the Jersey Limestone Quarries, Inc., near Hamburg, passed into the hands of the receivers and was dismantled in July, 1931.

The plant of the New Jersey Lime Products Corporation at Ogdensburg which had been in receivership for over a year, was sold on March 24, 1931, to the Franklin Lime Products Company of Newton, which expects to begin operations as soon as business conditions improve.

Most of the limestone produced in 1930 was sold for use as fluxing stone in the blast furnaces, for the manufacture of Portland cement, and in the construction of roads. However, a considerable amount of stone was also sold for special purposes such as for asphalt filler, poultry grit, rubber filler, in the manufacture of chemicals, and as a very finely-ground powder for use on fields as a soil-sweetner.

PRODUCTION OF LIMESTONE IN 1930 AND 1929

	Quantity—short tons		*Value—dollars*	
Use	1930	1929	1930	1929
Road metal and concrete	65,900	48,093	86,681	68,714
All other[a]	111,020	178,976	299,770	366,149
Totals	176,920	227,069	386,451	434,863

a. In last year's report on the mineral industries a considerable amount of limestone sold for use in the manufacture of cement was included in this item. The amount quarried for this purpose in 1930 has been eliminated from the compiled totals since the value of this production is also included in the reported value of the cement into which it went. Had the amount of limestone so used in 1930 been included in the above figures, the value of production in 1930 would have almost equalled that in 1929.

The data available is insufficient to present any estimate of the production of limestone in 1931.

Other stone. The production of slate, granite, sandstone, marble and argillite is grouped under this heading in order to conieal the output of individual operators.

A small amount of slate was produced by the Lafayette Slate Mining Corporation in the early part of 1930, but the company's inability to sell its product at satisfactory prices forced the indefinite suspension of operations before mid-year.

Sales of crushed granite-gneiss were reported by Charles Heigold and the Pompton Crushed Stone Company in 1930 and a report has already been received from the Scrub Oaks Mine of the Alan Wood Mining Company for 1931. The utilization of former waste products—a matter already mentioned under *Limestone*—is now adding to the income of at least four companies primarily engaged in mining who have found that the washed tailings from the milling of their ores can be sold in direct competition with similar material from sand and gravel operations.

The de Flesco Bros. Co., Inc., of Wilburtha, Mercer County, and the Closter Stone Quarries of Closter, Bergen County, formerly operated under the name of the owner, James L. Bried, were the only large producers of sandstone in 1930 and 1931. The former company, operating a quarry near Wilburtha Station on the Pennsylvania Railroad, has supplied the stone for a number of churches and institutional buildings recently built in Mercer County, and also supplied all the stone used by the Pennsylvania Railroad in the rebuilding of its viaduct through New Brunswick. The second-named company furnished rough and cut stone for building construction in the metropolitan district around New York.

It seems possible, even likely, that the present business depression may serve ultimately to benefit New Jersey's sandstone producers since architects and builders are being forced to scan costs more closely than for many years past. Some of the business which formerly was given to quarries in Indiana may now be given to local operators. Be that as it may, certainly it is true that this Department during the past year received a number of inquiries concerning the quality and character of the sandstone produced in this State. Some of these inquiries have asked specifically whether a light-colored stone is available. Because such information has not been printed in a good many years it will here be repeated that the sandstone quarried at Wilburtha is available in both pink and light-gray tones; and that quarried by the Closter Stone Quarries, Inc., is an arkosic, light-gray or buff sandstone which is almost as light-colored as Indiana limestone. The light color of the latter, its ease of working, and its proximity to points in eastern New Jersey should all appeal strongly to architects and builders in that part of the State who have under consideration the construction of stone buildings at moderate cost.

The quarry operated by Charles T. Eastburn at Raven Rock was closed in 1930.

The only marble being quarried in the State (other than the white "limestone" of Sussex and Warren counties) is a serpentinous variety called "verde antique" which takes a high polish and is used for the interior decoration of fine office buildings, banks, hotels and similar structures. It is produced only by the Rock Products Company of Easton, Pa.

The production of argillite decreased rather sharply in 1930 and again in 1931.

The quarry in Princeton operated by Princeton Quarries, Inc., was closed in 1931.

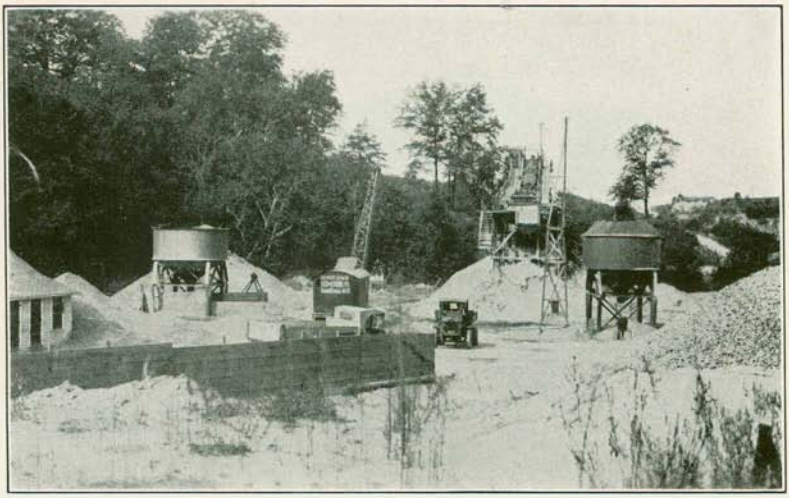
SAND AND GRAVEL.

Production and sales of sand and gravel in 1930 were also higher than anticipated, the total amounting to 5,969,479 tons, a decline of 11 per cent from the volume produced in 1929 and sales totalling $5,009,866, a decline of 10.3 per cent from the total for the previous year. This relatively good showing was due entirely to sales of sand and gravel for construction purposes, the value of such sales exceeding similar figures for 1929 by 15 per cent. Sales of sand and gravel reported under most of the other classifications decreased rather sharply, the most pronounced declines being in the sales of sand used in manufacturing industries. Thus, sales of molding sand declined 31 per cent, sales of cutting, grinding and blast sand declined 30 per cent and sales of "fire furnace" sand declined 50 per cent; whereas sales of filter sand were only 8 per cent less than in 1929. Detailed statistics of the production of sand and gravel are given in the following table.

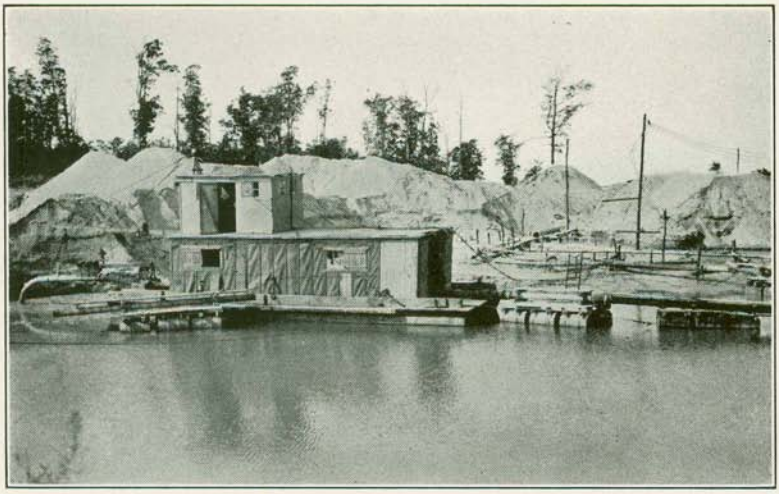
PRODUCTION OF SAND AND GRAVEL IN 1930 AND 1929

Products	*No. of pits* 1930	1929	*Quantity—short tons* 1930	1929	*Value—dollars* 1930	1929
Glass sand	4	6	119,410	166,822	209,607	257,757
Molding sand	36	41	477,738	731,246	626,522	903,513
Structural sand	54	63	1,888,009	1,888,164	1,181,358	1,111,738
Paving & road-making sand.	43	46	1,606,815	2,044,357	875,188	1,105,122
Cutting, grinding & blast sand	5	8	47,716	67,319	113,556	163,143
Fire or furnace sand	9	14	39,072	81,546	54,584	109,527
Engine sand	8	6	45,035	76,348	15,096	32,728
Filter sand	3	4	28,237	30,039	74,150	80,725
Other sand	5	8	64,208	12,723	77,846	11,136
Total sand			4,316,240	5,098,564	3,227,907	3,775,389
Structural gravel	36	38	900,755	752,762	1,167,758	930,241
Paving & road-making gravel	26	30	655,143	856,166	553,559	864,378
Other gravel	6	3	97,341	14,006	60,642	15,277
Total gravel			1,653,239	1,622,934	1,781,956	1,809,896
Total sand and gravel			5,969,479	6,721,498	5,009,866	5,585,285

One of the interesting things brought out by the above tabulation is the smaller number of operating pits in 1930. It is expected that the elimination of the weaker units in the industry will continue for two or three years as productive capacity is now far in access of actual needs and the severe competition natural in such a situation has led to steadily lowered prices. That no immediate relief is in sight for the harassed producers of high-cost sand and gravel is evidenced by the fact that

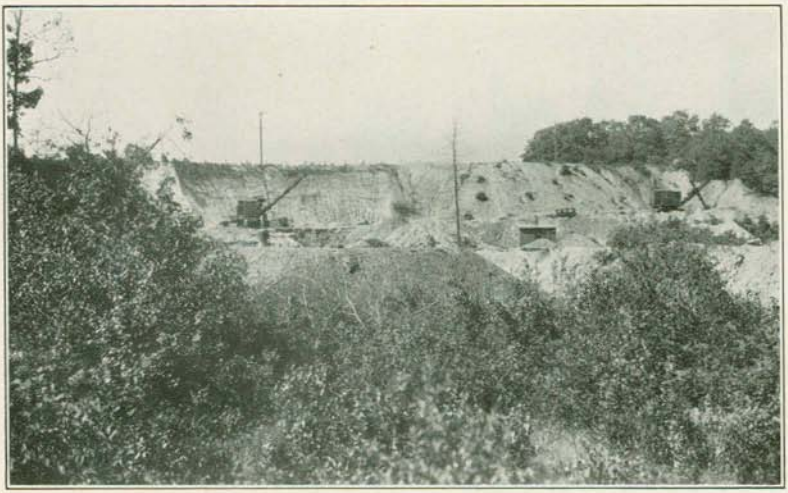


(a) *A sand and gravel plant near Little Falls. Note the prevailing stock piles.*



(b) *Dredging sand south of Eatontown. One of the sand and gravel pits operated by Fred McDowell of Asbury Park.*

(a) *Clay-digging machine used by the Crossman Company in its large pit near Parlin.*



(b) *Clay pit operated by H. C. Perrine and Son at the headwaters of Cheesequake Creek.*

large, new and more efficient plants for the washing and sizing of sand and gravel are still being built. Within the last year a number of companies have built plants capable of large production of which the following are perhaps the most important.

Braen's Sand and Gravel Company. Plant near Wykoff, Bergen County.

Bridgeton Sand Company. Plant at Williamstown Jct., Camden County.

Great Notch Corporation. Plant at Pompton Plains.

Morris County Sand and Gravel Company. Plant near Netcong.

George F. Pettinos. Plant near Manumuskin, Cumberland County.

Sowerbutt Brothers. Plant at Pompton Plains.

The plant at Manumuskin was built to produce blast sand and molding sand; that at Bridgeton will produce chiefly "silica" sand; and the others will produce washed and sized sand and gravel.

Since labor is a very important part of the ultimate cost per unit of material produced, particular attention has been given in recent years towards a reduction of this item. Skillful plant design has resulted in notable achievements in the efficiency of production as measured in tons-per-man-shift. A good example of efficient production is given by the Paulsboro plant of the Strathman Sand and Gravel Company where five men produce 1300 tons of washed sand and gravel in a ten-hour shift. Operating an entirely different type of plant, the Glenn-Rock Concrete Products, Inc., of Jamesburg, can easily produce three hundred tons of washed sand and gravel daily with a working force of only three men. Of course, the larger plants can usually be designed for more efficient production, and for that very reason it is probable that many of the sand and gravel plants in this State with capacities in excess of 100,000 tons annually have efficiencies in excess of 100 tons per day per man-shift.

The data available is insufficient to estimate the 1931 production very closely, nevertheless it is obvious from the reports already received that production in that year fell far below that of 1930—probably from 25 to 30 per cent less. Moreover prices received in 1931 were at least 10 per cent lower than in 1930 and it is probably safe to say that the total value of the 1931 production will be fully 30 per cent less than the $5,009,866 received in 1930.

CLAY.

Operators of clay pits were among those hardest hit in 1930, since sales of raw clay declined 30.3 per cent in volume and 30.4 per cent in value from similar figures for the previous year. Most of the raw clay sold in New Jersey is fire clay and since such clay is used chiefly in the metallurgical and clay-products industries it is not surprising to find

that sales to those industries in 1930 were reduced in about the same proportion as their manufacturing activities were curtailed. Sales of stoneware clay and clay for miscellaneus purposes were also reduced markedly. A small increase in the production of ball clay represented the only gain for the entire industry.

Sales reported for 1930 and comparative figures for the previous year are given in the following table:

RAW CLAY SOLD IN 1930 AND 1929

Kind of clay	*No. of pits*	*Production—short tons* 1930	1929	*Value—dollars* 1930	1929
Ball clay	5	7,901	5,464	45,962	30,272
Fire clay	33	157,223	189,125	646,349	840,025
Stoneware clay	5	2,659	10,329	16,203	50,373
Miscellaneous clay	4	2,503	39,340	4,622	103,133
Total		170,286	244,258	713,136	1,023,803

Reports representing more than 60 per cent of the 1930 production have already been received for 1931. These indicate an additional decline of about 20 per cent in production for that year, and a decline in value of about 13 per cent. If these percentages hold true for the whole industry, production in 1931 was approximately 136,000 short tons—the smallest amount of clay sold since detailed records of the clay industry have been available, and probably the least production in any year since about 1875.

There were no new operations reported in 1930 and most of those active were worked only spasmodically. The Frilan Mining Company which reported opening a new pit near Whiting, Ocean County, in1929, was reported as "out of business" in 1930. The business of F. A. Hillman, who died in 1930, has also been discontinued.

BRICK AND TILE.

On the basis of building permits issued in 168 of the largest cities in the country, the F. W. Dodge Corporation estimated that the value of building construction in 1930 was approximately 21 per cent less than in 1929. For metropolitan New York (which includes northern New Jersey) the decline was estimated at 24.4 per cent. In view of these figures the decline of 19.6 per cent in the sales of brick and tile marketed by New Jersey producers is fairly creditable and shows that they are retaining a fair proportion of the business available. That this proportion could be increased, however, is indicated by the fact that competitors from Ohio have obtained some of the New York trade. For several years past, these competitors have sold face brick in the New York area at a price, which, allowing for the freight rate from Ohio, could scarcely cover the cost of production. It would appear that this selling represents the disposal of surplus production at prices made low enough to get the business regardless of cost. If this is true, it is an example of the dumping of products which is so greatly

decried by all business men, but which has been practiced by many powerful corporations as well as nations within recent years. It is apparently a phenomenon engendered by mass production, and though such a policy might be warranted by special circumstances, in general it must be unwise since it serves to dissipate the assets of the manufacturing units involved without adequate return. For this reason it is expected that the competition from Ohio will in time be eliminated. Until then, however, New Jersey producers would do well to hide their time and sell only at a fair price.

A glance at the tabulated statistics of the production of brick and tile in the two years, 1930 and 1929, shows several interesting things. For instance, there was a decline of 26 per cent in the number of plants manufacturing common brick, and an increase of 11 per cent, or from $11.50 a thousand to $12.80 a thousand in the price received. Yet a similar decline in the number of plants producing face brick left the price received for that product practically unchanged. This apparent anomaly is possibly due to the competition from outside sources—a matter already discussed in the preceding paragraph.

The detailed statistics also show that there was a marked decrease in sales of ceramic mosaic and wall tile, and a most surprising increase in the sales of special shapes for refractory linings of furnaces.

BRICK AND TILE PRODUCED IN 1930 AND 1929

Products	*Plants operating* 1930	1929	*Quantity produced* 1930	1929	*Value in dollars* 1930	1929
Common brick	17	23	169,714 M	247,730 M	2,172,417	2,847,564
Face brick	5	7	15,265 M	21,937 M	539,358	784,853
Fire brick:						
(a) Brick, etc.[a]	8	10	14,451 M	17,450 M	722,696	928,170
(b) Special shapes	5	4	15,574 s. t.	5,551 s. t.	477,568	262,930
Hollow building tile	8	8	383,347 s. t.	434,068 s. t.	2,991,923	3,496,477
Floor tile	8	5	2,088,194 sq. ft.	2,208,296 sq. ft.	457,412	514,641
Ceramic mosaic	6	7	1,237,306 sq. ft.	4,256,486 sq. ft.	236,702	835,692
Enameled tile	5	5	2,443,761 sq. ft.	2,018,527 sq. ft.	973,818	1,098,043
Faience tile	6	5	148,167 sq. ft.	285,813 sq. ft.	141,707	244,664
Wall tile	6	6	3,487,264 sq. ft.	6,071,835 sq. ft.	1,129,867	2,157,406
Drain tile	4	5	821 s. t.	1,474 s. t.	14,394	20,450
Terra cotta, etc.[b]	11	..	69,648 s. t.	84,730 s. t.	4,098,135	4,826,215
Other brick and tile products	5	..			c 686,083	d 1,095,133
Prepared clay	14	..	18,694 s. t.		119,611	
Refractory cement (clay)	7	..	9,533 s. t.		601,492	
Total value					15,363,183	19,112,238

M=thousands s. t.=short tons.

a. Includes brick, block or tile for locomotive and other fire-box lining, etc. (9-inch equivalent).
b. Includes terra cotta, conduit, floor-arch, silo and cornerib tile; radial chimney blocks, and fire-proofing tile.
c. Includes fancy, enameled and hollow brick and glass-house tank blocks.
d. Includes fancy, enameled and hollow brick.

Statistics for the production of brick and tile in 1931 are as yet unavailable, but since the volume of building construction in that year was 32 per cent less[1] than in 1930, it is probable that production declined fully 25 per cent.

POTTERY.

The total value of all pottery products made in New Jersey and sold in 1930 was $14,456,246. This is the smallest amount received in any of the past twelve years; moreover, it is the first *time* since 1914 that the value of brick and tile production has exceeded that of pottery products. The greater decline registered in sales of pottery products is chiefly due to the fact that whereas sales of bathroom and toilet fixtures declined in about the same proportion as sales of brick and tile products, sales of what might be called "luxury goods"—namely, art pottery, white ware and chinaware—were just about half what they were in 1929.

Fifty-eight potteries reported production in 1930. A number of these are new concerns; others are consolidations of former enterprises. The following list is believed to include practically all of the recently incorporated potteries;

Cook-Ceramic, Inc., Trenton. A consolidation of Ceramic Allied Products, Inc., and the Cook Pottery Company.
Logansville Pottery, Bernardsville.
Marshall Mills, Inc., Plainfield.
Wenczel Tile Company, Trenton.

The year 1931 saw the passing of the old International Pottery in Trenton. Originally founded in 1860, it was one of the first potteries to be built in Trenton and its razing has destroyed a well known landmark in the central part of the city. In January, 1932, another pottery, the New Brunswick plant of the Circle F Manufacturing Company, was added to the newly-formed Cook-Ceramic Company by purchase. Announcement was made that the manufacturing activities of the New Brunswick plant would be transferred to Trenton, but the ultimate disposition of the New Brunswick plant was not stated.

1. Survey of *current* business: U. S. Dept. of Commerce, vol. 12, No. 2, p. 12, 1932.

POTTERY MANUFACTURED IN 1930 AND 1929

Products	*Plants operating* 1930	1929	*Quantity—pieces* 1930	1929	*Value—dollars* 1930	1929
Red earthenware	3	4			120,898	93,428
White ware		3			(a)	219,720
Vitreous china plumbing fixtures:						
(a) Bathroom and toilet fixtures						
Closet bowls—Siphon jets	15	13	102,161	180,079	1,013,024	958,254
Washdowns	16	14	248,587	386,581	1,151,852	1,693,643
Reverse traps	13	13	32,464	58,905	187,407	336,165
Flush tanks—Lowdown	16	13	241,267	333,941	1,354,808	1,888,897
Lavoratories	11	8	108,915	123,324	1,546,380	1,753,001
Other bathroom and toilet fixtures	13	9			506,865	441,004
(b) Other vitreous china fixtures	7				262,343	496,261
Semi-vitreous or porcelain plumbing fixtures	13				2,225,085	3,094,595
Porcelain electrical supplies	15				2,618,776	3,967,028
Art pottery and gas and electric logs	7				325,226	(b)
Saggers	24	22			156,796	220,228
White ware, porcelain china and hotel china	6				2,090,232	(c)
Other pottery products	15				d 896,554	4,436,427
Total value					14,456,246	19,598,651

a. Included in a subsequent item.
b. Included in "Other pottery products."
c. Value of porcelain china and hotel china included in "Other pottery products."
d. Includes chemical stoneware, chemical porcelain, and all other flush tanks.

GREENSAND MARL.

The discovery and development of readily-soluble potash salts in New Mexico and Texas has probably put an end to all research work directed towards the profitable recovery of potash from the greensand marl beds of New Jersey and Delaware. The use of treated greensand marl in water-softening devices, however, is firmly established and the production of marl for that purpose in 1930 was almost as great as in 1929. The year 1930 marked the end of one enterprise, Potash-Marl, Inc., whose plant near Marlton has since been sold and dismantled. It also marked the initial report of a new plant owned and operated by the Inversand Company of Clayton. This plant is located near Sewell and the writer was interested to find that here also, as at Marlton, Reeves Station and Birmingham, the marl bed utilized is the Hornerstown. As in the pits to the northeast the marl is dark-green and consists very largely of the mineral glauconite. Numerous fossils, uncovered in the course of digging, definitely established the identity of the formation on paleontologic grounds; but even without their aid the color and character of the formation would have served to identify it.

Incomplete statistics for 1931 indicate that production in that year declined nearly 30 per cent from that of 1930, the estimated total of 9050 short tons being the smallest amount of greensand marl sold in any year since 1922.

FELDSPAR (ground).

No crude feldspar is produced in New Jersey, but a considerable proportion of that mined in other states is shipped to Trenton for grinding. In 1930 four firms reported sales of the ground product, most of it being sold to the potteries in Trenton.

In addition to its use in the manufacture of pottery, feldspar is a vital constituent of the glazes used on enamel ware, brick and tile[1]. It is also used in the manufacture of the white, opaque glass so frequently seen in table tops and soda fountains. Most of the bathtubs in use today are made of cast iron which has been coated with an enamel rich in feldspar. Some of the purest feldspar is used in the manufacture of artificial teeth—a minor use, perhaps, but an important one.

Sales of feldspar in 1930 were drastically curtailed as a result of the business depression, the total value, $276,626, being a reduction of more than a third from the total for the previous year.

1. The information given in this paragraph has been abstracted from Information Circular 6381 of the United States Bureau of Mines, a mimeographed paper which describes very fully the varieties, physical properties, uses, etc., of the common feldspar minerals, and the mining, grading and milling methods used in exploiting and preparing them for sale. A valuable part of the paper is a good bibliography covering articles that have appeared on this subject in recent years.

Lime. The production of lime is no longer an important industry in New Jersey, yet if figures were available it could probably be shown that as much lime is used in the State today as was used twenty years ago, when nineteen lime plants were in operation. In 1930, as in the preceding year, the only plant in operation was that of the Peapack Limestone Products Company of Peapack. Although production figures cannot be published seperately, it is pleasing to be able to record that this firm did about as well as in 1929.

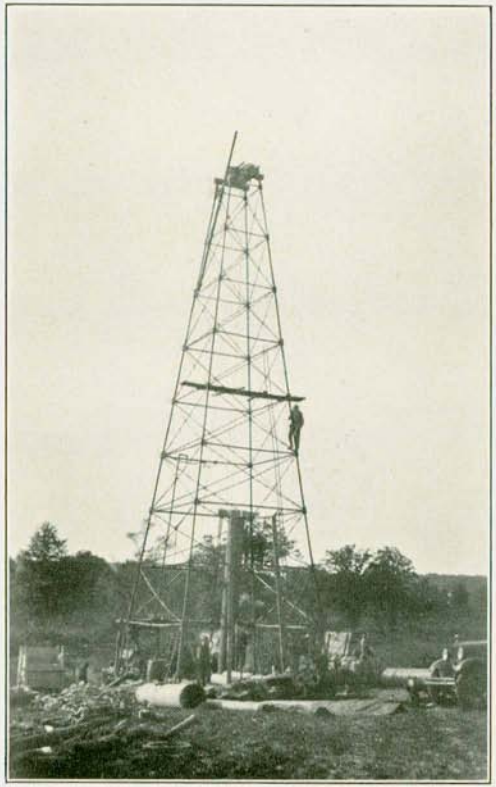
The plant of the New Jersey Lime Products Company at Ogdensburg, which was shut down October 16, 1929, was sold on March 24, 1931, to the Franklin Lime Products Company of Newton. The new company plans to resume operations at the Ogdensburg plant as soon as business conditions improve.

Portland cement. Although the two cement plants now operating in New Jersey reported further declines in output and sales in both 1930 and 1931, there is a strong prospect that the year 1932 may see the completion of a new plant on the north bank of Raritan River, just below New Brunswick. Construction of an industrial plant was started at that location several years ago by the Building Materials Corporation, but financial difficulties, followed by receivership, halted construction work and it was not until 1931 that Thomas A. Edison, Inc., began negotiations for the acquisition of the property. Although the sale of the property to the Edison interests has not yet been definitely announced, it is fully expected that such an announcement will be forthcoming as soon as a satisfactory settlement of overdue taxes can be made. According to the newspaper story in which this information first appeared, the new plant will be operated by the Edison Portland Cement Corporation.

Pulverized sand. Although production of pulverized sand in 1930 was only a little less than in 1929, the year saw the withdrawal of one producer, the Trenton Flint and Spar Company, which on June 3 sold its flint business to the Consolidated Feldspar Corporation. The year was also marked by the institution of lawsuits against several of the important producers by former employees and the relatives of others who have died as the alleged result of inhaling powdered quartz and the consequent development of silicosis.

Talcose rock (ground). A moderate increase in sales of talcose rock for 1930 was reported by the Rock Products Company of Easton, Pa. For more than fifty years this company and its predecessors has operated a quarry on the northwest flank of Marble Mountain near Phillipsburg in a greatly altered and serpentinized limestone. The serpentine produced is sold for terrazo and interior decoration. The

(a) *A type of machine used for drilling in hard rock. Cutting action is produced by the use of small steel shot under the rotated bit.*



(b) *A rig used in drilling large-diameter wells where heavy tools and casing must be employed.*

talc, which occurs with the serpentine, is also quarried and is ground to a very fine powder for use as a filler in paper, pigments, rubber goods, and various other manufactured articles.

Non-clay refractories. The total value of the production of silicon-carbide brick, non-clay refractory cements, other non-clay refractories of alumina, silicon-carbide, and chrome, and of carbon crucibles is included as an item in "Other Products" in conformance with the practice of previous years. In 1930 there was a considerable drop in this item as compared with 1929.

Mention of carbon crucibles brings to mind the thought that probably few people know that although at the present time there is no production of natural graphite in New Jersey, artificial graphite is being made in a plant at Linden, owned and operated by the American Cyanamid Company of New York.

By-product coke. The by-product coke industry of New Jersey is apparently one of the few in which production and consumption are very evenly matched. In 1930 the value of sales was slightly less than in the previous year, but the volume of sales was slightly greater. Since the bulk of the coke made is sold to domestic users, this means that they benefited by some-what lower prices. And since the cost of the coal used by the coke manufacturers was also less, it seems probable that the latter made their usual profit and that in the last analysis the only losers were the companies that mined the coal. Statistics for 1931 are not available as yet.

It is with great regret that we record the passing of what gave promise of being a profitable and important enterprise. The low-temperature coking plant of the International Combustion Engineering Corporation at Piscataway, near New Brunswick, has had to be abandoned. In 1930 it was operated for a while on an experimental scale in order to improve the process used. These experiments being completed, the whole plant was then operated from December 1, 1930, to March 7, 1931. Even then the plant failed to earn a profit. Apparently the chief difficulty was in obtaining a high percentage of lump coke, the relatively large amount of "fines" or "breeze" produced by this process having to be sold at a very low figure. Also the unit price received for other products was less than had been anticipated and apparently was not offset by a lower delivered price for coal than had been used in original estimates.

Since the closing of operations the water-gas plant and gas holders have been sold to the Public Service Corporation and the remainder of the plant will be disposed of as soon as possible.

WATER SUPPLY.

For many years the Division of Geology and Topography has maintained a file of well records to assist the geologist of the Division in advising individuals, corporations, well drillers and others upon the

best location for wells, the depth to a water-bearing stratum, the probable yield, and many similar questions pertaining to ground-water supply. This work has steadily increased in importance as the growth of population has necessitated the drilling of many additional wells to augment existing supplies, and has also added to the difficulty of obtaining unpolluted water. Since the failure of one deep well may mean the loss of serveral thousand dollars it is felt that this service, if utilized, might well save the residents of New Jersy an annual amount exceeding the entire cost of operating the Divison of Geology and Topography. Because new and improved methods of drilling (see Plate IV) have greatly increased the potential yields over those to be obtained from older methods, the Divison has in recent years endeavored to add to its files the records of all wells giving new and accurate data. Since this State, unlike many others, has no law compelling the filing of such information, it is only natural that many wells are drilled of which no record is ever obtained. Nevertheless, it is a pleasure to be able to record that most indivduals and well drillers when asked for well records have responded with great willingness, and as a result about a thousand new records have been obtained in the last four years. Since these records pertain to wells drilled in all parts of the State the Divison is now in a better position than ever before to advise upon questions relating to ground-water supply.