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

BULLETIN 29
Geologic Series

THE MINERAL INDUSTRY OF NEW JERSEY FOR 1925

Compiled by
M. W. TWITCHELL, *Ph. D.*
Assistant State Geologist

Published 1927
Division of Geology and Topography

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By M. W. Twitchell

Asst. State Geologist

GENERAL SUMMARY

Co-operation in Collection of Statistics. As in the previous year the Bureau of Mines and Bureau of the Census, of the United States Department of Commerce, co-operated with the Division of Geology and Topography of the New Jersey Department of Conservation and Development, in the collection of statistics regarding the mineral industry of New Jersey for the calendar year 1925. Each organization publishes the statistics independently. Our grouping of the figures for New Jersey, includes some items that the Federal Bureaus omit; and leaves out some items which they include, so the totals for the State do not agree exactly. The effort is made to ascertain the output of every mineral producer in New Jersey. If any producer reading these pages has reason to believe that his output was overlooked he will help enhance the reputation of the State as a producer of mineral products by seeing that his name is placed on our list of operators as an aid to future correspondence. All individual reports are held confidential. Another form of co-operative effort that will be appreciated is to advise us of any new operators who may start production in your neighborhood.

Total Value of the Mineral Production in 1925. In 1925 the total value of the mineral production in New Jersey was $85,259,450. As the corresponding figure for 1924 was $81,558,477 there was an increase of $3,700,973. It is gratifying to see that the State not only maintained the high level of the past few years; but even made a further advance.

General Table. In the following table there is given a general summary of the quantities and value for 1925 of the principal mineral products with the figures of 1924 for comparison. Details regarding the individual industries will be found in the pages that follow:

MINERAL PRODUCTION IN NEW JERSEY IN 1925

Products	Producers	1925 Quantity	1925 Value	1924 Quantity	1924 Value
Zinc ore	1	606,177 s. t.	(a)	610,944 s. t.	(a)
Iron ore	4	163,593 l. t.	$672,832	(a)	(a)
Stone	44	2,335,820 s. t.	3,656,943	2,149,270 s. t.	$3,326,298
Sand and Gravel	66	4,886,994 s. t.	3,658,312	3,968,361 s. t.	3,345,764
Clay (b)	44	343,202 s. t.	1,418,979	352,734 s. t.	1,486,032
Brick and Tile	72	.....	21,610,853	.....	20,445,851
Pottery	54	.....	24,399,771	.....	25,968,316
Greensand Marl	5	12,728 s. t.	179,788	14,055 s. t.	151,205
Peat	4	31,530 s. t.	160,695	23,523 s. t.	172,863
Other products (c):					
Coke	2				
Feldspar (ground)	3				
Fuel Briquets	2				
Limonite (Misc. uses)	1				
Lime	2		$29,501,277		$26,676,200
Portland Cement	2				
Quartz (ground)	4				
Talcose rock (ground)	1				
Zinc ore	1				
Total	312		$85,259,450		$81,558,477

(a) May not be separately published. Value included in total of "Other products.
(b) This covers only clay sold as clay.
(c) The coke and fuel briquets were made from Pennsylvania coal. The feldspar was mined outside of the State and ground at Trenton. In 1924 the value of iron ore was included under this heading.

ZINC ORE

The New Jersey Zinc Company continued its active production of zinc ore from its two mines near Franklin, Sussex County, during 1925. The quantity mined was 606,177 short tons, which is about the same as in 1924. The value of this ore may not be separately published, as there is only one operator; but it is included under the head of "Other products" in the preceding general table.

The ore produced by this Company is a mixture of the three zinc minerals, zincite, franklinite and willemite. The ore is crushed dried and separated by electro-magnets into several products. These products are smelted at the Company's smelters at Palmerton, Pennsylvania, and high grade metallic zinc, zinc oxide and a manganiferous residuum obtained therefrom. A grand total of more than 10,600,000 short tons of zinc ore have been taken from the New Jersey mines since 1880. New Jersey ranks as one of the three or four leading zinc-producing States in the Union.

The U. S. Bureau of Mines, in "Mineral Resources of the United States, 1925;" Part I, page 3, publishes the following statement regarding the production of zinc in the Eastern States in 1925:

"The recoverable zinc in the ore mined in the Eastern States in 1925 was valued at $18,531,644.

(N. B.—The value of the zinc in New Jersey is not that of ore mined. It is the estimated smelting value of the recoverable zinc content of the ore after freight, haulage, smelting and manufacturing charges are added.)

Zinc ore mined in New Jersey in 1925 was 606,177 short tons, in Tennessee 914,373 tons, and in New York 47,254 tons.

All of the zinc ore from Tennessee and New York went to concentrating plants and of the zinc ore from New Jersey about 390,000 tons was concentrated. In Virginia 120,459 tons of lead-zinc ore was concentrated, yielding both lead and zinc concentrates.

The recoverable zinc in the ore mined in New York in 1925 was 10,316,000 pounds, in Tennessee 32,512,000 pounds, and in Virginia 5,464,000 pounds."

On page 4 of the same report the additional statement is made that the recoverable zinc in the 606,177 tons of zinc ore mined in New Jersey was 178,522,000 pounds.

IRON ORE

The iron mining industry in New Jersey, while showing improvement in 1925 as compared with 1924, does not yet present signs of very vigorous activity. The total shipments of iron ore, practically all magnetite, in 1925 were 163,593 long tons, having a value of $672,832. The operators shipping this ore were the Replogle Steel Company, operating the Mount Hope Mine near Mount Hope, Morris County, which they recently acquired from the Empire Steel and Iron Company; the Thomas Iron Company, operating the Richard Mine, near Wharton, Morris County; and the Ringwood Company, shipping from the Cannon and Peters Mines, near Ringwood, Passaic County.

STONE

Chiefly because of its great output of crushed trap rock, or basalt, New Jersey stands in a very creditable position among the stone producing States. Its rank on the basis of quantity is usually twelfth or thirteenth. In 1925 the total production of stone in New Jersey was 2,335,820 tons having a value of $3,656,943. This was an *increase* of 186,550 tons in quantity and $330,645 in value over the preceding year.

Details in regard to the production of stone in 1925, with the figures of 1924 for comparison, are given in the following table:

PRODUCTION OF STONE IN NEW JERSEY IN 1925

Variety	Producers	1925 Quantity	1925 Value	1924 Quantity	1924 Value
Trap (basalt)	(a) 30	2,011,150 s. t.	$3,140,696	1,808,260 s. t.	$2,806,365
Limestone	(b) 8	237,100 s. t.	338,037	282,700 s. t.	390,837
Other stone.....	(c) 6	87,570 s. t.	178,210	58,310 s. t.	129,096
Total	44	2,335,820 s. t.	$3,656,943	2,149,270 s. t.	$3,326,298

(a) Chiefly crushed stone for road material, concrete and railroad ballast.
(b) Includes stone for blast furnace flux; agricultural purposes, use as road metal and other purposes.
(c) Includes argillite, granitoid gneiss, sandstone and serpentine marble. The granitoid gneiss was all crushed stone; the sandstone was rough construction and architectural stone and rip rap; the serpentine marble was partly block and partly crushed for terrazo; the argillite was partly building stone and partly crushed stone.

Trap rock or basalt. The State once more broke its own record in the production of trap rock, or basalt; its total quantity for the first time passing the 2,000,000-ton mark and the total value for the first time exceeding $3,000,000. No other State equalled this great output of this important variety of stone, so extensively used for road-making purposes. The increase over 1924 was 202,890 tons in quantity and $334,331 in value.

The 30 trap rock quarries that were operated in 1925 are located at Cliffside Park, Alpine and Englewood in Bergen County; Caldwell, South and West Orange in Essex County; North Bergen, Fairview and Snake Hill in Hudson County; Oldwick and Lambertville in Hunterdon County; Moore's Station and Pennington in Mercer County; Great Notch, Paterson, Richfield and Clifton in Passaic County; Chimney Rock, Millington and North Plainfield in Somerset County; and at Springfield, Union County.

Limestone. During 1925 the limestone industry of New Jersey continued to suffer from the adverse conditions that have existed for several years past. The number of operators reporting a production dropped from 11 to 8 and there was a decrease of 45,600 tons in quantity and $52,800 in value in the output. The output for 1925 was 237,100 short tons, valued at $338,037, which was partly white limestone intended for use as blast furnace flux, as a soil conditioner, for poultry grit, etc., and partly blue limestone intended for burning to make lime, and for use as crushed stone for paving and concrete construction. The white limestone was quarried near Sparta Junction and at Hamburg, McAfee and Ogdensburg in Sussex County; while blue limestone was quarried at Clinton and Vernoy, Hunterdon County; Peapack, Somerset County and near Newton in Sussex County.

Other Stone. It will be noted that there was an increase in 1925 in the output of the different varieties of stone grouped under the heading "Other stone", the increase being 29,260 tons in amount and

$49,114 in value. While this may not be a very large actual increase it is really one of 50 per cent in tonnage. This increase may, of course, be due to a few special contracts; and if so will not be permanent; but it follows an increase of 20 per cent in 1924 over 1923 and therefore is suggestive of an encouraging trend in this phase of our stone industry. The six quarries in this group that were operated in 1925 were one at Princeton which produced undressed building stone of the type known as *argillite* or "Princeton Stone"; one each at Raven Rock, Hunterdon County, and Closter, Bergen County, producing white or light tinted *sandstone* for building purposes; one at Kingston, Somerset County, producing *"bluestone"* one near Butler, Morris County, producing crushed *granitoid-gneiss* for road paving and concrete; and one near Phillipsburg, Warren County, producing block *serpentine* or *verd antique marble* and also crushed serpentine for terrazo.

SAND AND GRAVEL

The sand and gravel industry of New Jersey was in a prosperous condition in 1925. Increases in output were shown in nearly every variety of sand and also in the totals for all kinds of sand, for gravel and for sand and gravel, over the previous year. The grand total for sand and gravel in 1925 was 4,886,994 tons, valued at $3,658,312, which involved an increase of 918,633 tons in amount and $312,548 in value, over 1924. The detailed figures regarding the different varieties of sand, will be found in the following table:

PRODUCTION OF SAND AND GRAVEL IN NEW JERSEY IN 1925

		1925		1924	
Variety	Producers	Amount Net Tons	Value	Amount Net Tons	Value
Building sand	36	1,967,189	$909,433	1,385,392	$815,315
Molding sand	26	449,578	597,284	424,470	580,856
Paving sand (a)	22	1,061,582	560,276	937,966	533,689
Glass sand	6	195,770	310,796	184,831	298,297
Grinding and Polishing sand	6	81,119	213,057	101,056	250,698
Fire or Furnace sand	9	47,145	71,391	44,071	48,646
Other sands (b)	10	125,365	194,764	67,728	87,681
Total sand (a)	61	3,927,748	2,857,001	3,145,514	2,615,182
Building gravel	19	570,325	495,598	594,592	523,486
Paving gravel	18	388,921	305,713	228,255	207,096
Total gravel	29	959,246	801,311	822,847	730,582
Total sand and gravel (a)	66	4,886,994	$3,658,312	3,968,361	$3,345,764

(a) The figures here given for 1924, involve a correction, due to returns having been received after the Bulletin for 1924 had been published.
(b) Includes engine sand, filter sand and sand for purposes not specified.

A study of the above table shows that there was an *increase* in amount of 581,797 tons, and $94,118 in value in the case of building sand; an *increase* in quantity of 25,108 tons and $16,428 in value

in the case of molding sand; an *increase* in quantity of 123,616 tons and $26,587 in value in the case of paving sand; an *increase* of 10,939 tons in quantity and $12,499 in value in the case of glass sand; an *increase* of 3,074 tons in quantity and $22,745 in value in the case of fire or furnace sand; an *increase* of 160,666 tons in quantity and $96,617 in value in the case of paving gravel; an *increase* in total sand of 782,234 tons in quantity and $241,819 in value; an *increase* in total gravel of 136,399 tons in quantity and $70,729 in value. On the other hand there was a *decrease* of 19,937 tons in amount and $37,641 in value in the case of grinding and polishing sand; and a *decrease* of 24,267 tons in amount and $27,888 in value in the case of building gravel.

The four leading counties, ranked according to the value of their output of sand and gravel are as follows: Cumberland 537,063 tons, valued at $697,330; Burlington 1,412,488 tons, valued at $696,678; Middlesex 713,318 tons, valued at $652,623 and Morris 916,713 tons valued at $526,714. It will be noticed that Cumberland County and Burlington County were practically equal on the basis of value; but Burlington led on the basis of tonnage. The high rank of Cumberland County on the value basis is due to its being the leading county producing glass sand, and molding sand, and one of the two leading counties producing cutting and polishing sand.

CLAY

Clay. Clay is mined on a very large scale in the State of New Jersey. In fact it is one of the leading clay mining States in the Union. There are two phases of the States clay mining activities. One is the mining of clay in their own pits by the many great establishments engaged in making clay products of various kinds. When it is known that New Jersey produces annually about 350 million brick, about 400,000 net tons of hollow building tile and terra cotta, and about 16,000,000 square feet of floor, wall, faience and ceramic-mosaic tile, and that most of this is made from clay mined by the manufacturers and not reported as clay, it will be realized that this phase of the clay mining industry is fully equal, if not greater, in magnitude to the raw clay industry. The second phase of the clay mining activities in New Jersey consists in the mining of clay that is sold as raw clay, partly to New Jersey clay product manufacturers, including many potteries who use it for making saggers and as a part of the clay body in large articles such as bath tubs; and partly to plants outside of the State. It is this phase of the industry only, that reports its output and sales. The figures given below are therefore for the clay mined in New Jersey and sold as raw clay. The total state output of such clay in 1925 was 343,202 short tons, valued at $1,418,979. By far the larger part of this was the high grade variety known as plastic fire clay, which stands high temperatures

in the kiln. In general, the amount of clay, mined and sold as clay, was about the same in 1925 as in 1924. There was actually a *decrease;* but the amount, only 9,531 tons, was so small compared with the great total mined and sold, 343,202 tons, it is practically negligible. The decrease in value, was $67,053. Futher details regarding the clay industry will be found in the following table:

CLAY MINED AND SOLD AS CLAY IN NEW JERSEY IN 1925

Variety	Producers	1925 Quantity	1925 Value	1924 Quantity	1924 Value
Fire clay	36	269,660 s. t.	$1,233,502	268,401 s. t.	$1,234,718
Ball clay	3	5,155 s. t.	30,096	5,366 s. t.	37,040
Stoneware clay	5	15,865 s. t.	69,817	8,053 s. t.	31,046
Miscellaneous clay (a)	9	52,523 s. t.	85,564	70,914 s. t.	183,228
Total	44	343,203 s. t.	$1,418,979	352,734 s. t.	$1,486,032

(a) Chiefly clay for use in making terra cotta.

From a study of the above table it will be found that there was a small *increase* in the amount, 1,259 tons, but a small *decrease* in the value, $1,216 in the case of fire clay; small *decreases* in both quantity, 211 tons and value, $6,944 in the case of ball clay; notable *increases* in both amount, 7,812 tons and value $38,771, in the case of stone ware clay; and *decreases* in amount, 18,391 tons and value $97,664 in the case of miscellaneous clay.

Middlesex still leads among the counties. In 1925 its production was 254,662 tons, valued at $1,241,358. This was 15,883 tons less in quantity; but $26,752 greater in value than in 1924.

CLAY PRODUCTS

As for several years past, the 1925 statistics in regards to clay products were collected and compiled co-operatively by the Division of Manufacturers, Bureau of the Census, of the United States Department of Commerce, and the Division of Geology and Topography of this Department. In 1925 the total value of New Jersey's output of all clay products was $46,010,624. This was $403,543 less than in 1924; but in view of the great total involved, it can be fairly claimed that this small decrease was unimportant and that the industry practically maintained the high production of several years past.

BRICK AND TILE

There was a general improvement in the brick and tile industry in New Jersey in 1925 as compared with 1924. The total output in 1925 was valued at $21,610,853 which was an increase of $1,165,002. The value for 1925 fell below that for 1923 by $517,963; but it should be borne in mind that the figure for 1923—$22,128,816 holds

the record for the New Jersey output in this industry. The fact that all of these figures are very high readily appears if we go back a few years, as follows: for 1922 the total value was $17,243,445; for 1921 it was $11,294,374; for 1920 it was $15,423,652; and for 1919 it was only $10,228,430.

The quantity and value of the various kinds of brick and tile are given in the following table:

PRODUCTION OF BRICK AND TILE IN NEW JERSEY IN 1925

Products	Producers	1925 Quantity	1925 Value	1924 Quantity	1924 Value
Common brick	29	309,101 M	$4,356,375	305,187 M	$ 4,542,788
Face brick	5	26,537 M	812,061	41,030 M	1,631,433
Enameled brick	3	9,458 M	831,791		
Terra cotta	6	39,876 n. t.	4,763,086	40,151 n. t.	4,060,042
Hollow bldg. tile (a)	8	416,563 n. t.	4,153,151	361,777 n. t.	3,631,713
Floor tile (b)	6	2,718,766 sq. ft.	677,127	3,770,819 sq. ft.	914,812
Ceramic mosaic tile	6	7,061,011 sq. ft.	1,467,315	5,533,122 sq. ft.	1,231,074
Faience tile (c)	5	443,163 sq. ft.	320,797	137,672 sq. ft.	154,223
Wall tile (d)	7	7,426,784 sq. ft.	2,334,152	6,957,674 sq. ft.	2,408,084
Fire brick	15	21,011 M	1,405,033	17,290 M	1,198,554
Miscellaneous (e)	9		489,965		673,128
Total	72		$21,610,853		$20,445,851

(a) Includes partition, load-bearing, back up, blocks, furring, book tile, floor arch, silo tile, corn-crib tile, conduits, radial chimney blocks and fire proofing.
(b) Including plain, vitreous, encaustic, quarry, etc.
(c) Including art tile, enameled tile, and hand-decorated tile.
(d) Includes thin, white, glazed, etc.
(e) Includes drain tile, flue lining, wall coping, and other products not listed.

A study of the above table shows that there were increases in most of the varieties of brick and tile in 1925 as compared with 1924. There was an *increase* in the case of hollow building tile of 54,786 net tons in quantity and $521,438 in value; an *increase* in ceramic mosaic tile of 1,527,889 square feet in quantity and $236,241 in value; an *increase* in the case of faience tile of 305,491 square feet in quantity and $166,574 in value; and an *increase* in the case of fire brick of 3,721 thousand in quantity and $206,479 in value. In the case of terra cotta there was an *increase* in value of $703,044, but a *decrease* in quantity of 275 net tons, and in that of face and enamelled brick, taken together, there was an *increase* in value of $12,419 but a *decrease* in quantity of 5,035 thousand. On the other hand in the case of common brick there was an *increase* in the output of 3,914 thousand but a *decrease* in the value of $186,413; in the case of wall tile, an *increase* of 469,110 square feet in amount but a *decrease* of $73,932 in value; in the case of floor tile a *decrease* of 1,052,053 square feet in quantity and $237,685 in value; and in the case of the miscellaneous group, there was a *decrease* of $183,163 in value.

Pottery. The total production of all classes of pottery ware in New Jersey in 1925 amounted in value to $24,399,771. While this was $1,568,545 less than in 1924 it was $561,316 greater than 1923 and the totals for all three years were too great to be otherwise than gratifying. *New Jersey leads the States in its great output of vitreous china plumbing fixtures,* which in 1925 had a value of $11,339,085.

PRODUCTION OF POTTERY IN NEW JERSEY IN 1925

Products	Producers	Value 1925	Value 1924
Whiteware (a)	3	$461,538	(e)
Hotel china	4	2,042,081	(e)
Vitreous china plumbing fixtures (b)	18	11,339,085	(f)
Porcelain electrical supplies	19	3,745,689	$3,507,229
Saggers	27	523,089	(g)
Other pottery products:			
Porcelain china (c)	5		
Chemical stoneware	3		
Plumbing fixtures other than those of vitreous china (d)	9	6,288,289	(h)
Red and brown white lined cooking ware	4		
Red earthenware	2		
Total	54	$24,399,771	$25,968,316

(a) Including cream color, white granite, semi-procelain, and semi-vitreous procelain.
(b) Includes the "vitreous china" portion of the ware formerly included under "sanitary ware."
(c) Including bone china, delft and Belleck ware.
(d) Includes the solid porcelain ware, semi-porcelain ware, and earthenware, formerly grouped under "sanitary ware."
(e) Included with hotel china and porcelain china, etc., the combined value being $4,016,715.
(f) Included with other plumbing fixtures under the term "sanitary ware" the combined value being $17,011,367.
(g) Not published separately.
(h) Different grouping. Figures not comparable.

Because of certain changes in classification and also because of the fact that it has not been possible to publish separately the values of certain varieties of ware, comparisons of the 1925 figures with those of 1924 are impracticable in connection with pottery. The chief change is in connection with the term "sanitary ware". After careful consideration, the United States Bureau of the Census, with whom we co-operate, decided to call for data on the production of "*vitreous china plumbing fixtures*", instead of "sanitary ware". The term "sanitary ware", as used in previous years was a broad one, covering in addition to the vitreous china plumbing fixtures, a considerable quantity of plumbing fixtures of solid porcelain, semi-porcelain and earthenware. The line of distinction is indicated in the following definition of vitreous china, which we understand has been accepted by a "manufacturers' advisory committee on vitreous china". working in co-operation with the United States Bureau of Standards:

"Vitreous china. The term *vitreous china* shall be applied only to such ware as will pass the following red ink test:

A fractured piece of material taken from any part of a vitreous china plumbing fixture, after being immersed in red anilin ink of good color-strength for one hour, shall not show any discoloration through the glaze and shall not show absorbtion when broken, to a depth greater than $\frac{1}{8}$ inch below the surface of fracture at any point."

The tabulated returns on the new basis show that the production of New Jersey, having a value $11,887,739 in 1925 was 43% of the country's output of vitreous china plumbing fixtures. This was the output of 18 establishments, some of which have as many as six separate potteries. Most of this great output was produced in the Trenton pottery district, which includes Trenton and its suburbs, within which are located fifteen out of the 18 establishments. Figures for the solid porcelain, semi-porcelain and earthenware plumbing fixtures may not be separately published but are included in the figure for "other pottery products."

CEMENT ROCK AND CEMENT

A high grade clayey limestone or "cement rock" occurs in Warren County, New Jersey. One belt extends from southwest of Alpha northeastwardly to the neighborhood of New Village. Two great cement plants are actively engaged in making Portland cement from this cement rock; the Edison Portland Cement Company, at New Village and the Vulcanite Cement Company at Vulcanite. The two companies together produce several million barrels of high grade cement each year. The value of the output for 1925 is included under the heading "Other products" in the general table on page 4. Another important belt of cement rock that yet awaits development extends from near Belvidere, for several miles in a northeasterly direction.

GREENSAND OR GREENSAND MARL

There are five active miners of greensand marl in New Jersey. The *Permutit Company*, of 440 Fourth Avenue, New York, has a large pit located $\frac{3}{4}$ mile northwest of Birmingham, Burlington County; and have recently completed a large and thoroughly equipped plant close to the Birmingham station, where they wash and treat the marl for water softening purposes. They ship the treated marl to various parts of the Country where their water-softening apparatus has been installed. The *Zeolite Chemical Company*, of 90 West Street, New York, has a pit and plant at Reeve's Station, $1\frac{3}{4}$ miles north of Medford, Burlington County. They wash and screen the marl and dry it in a long rotary kiln similar to those used in Portland cement plants. They sell both the crude and the refined marl for

various purposes. So far as we are informed they do not process the material ready for use in water softening though some of the parties to whom they sell do so.

Potash-Marl, Incorporated, of 15 East 40th Street, New York, have a pit and plant one mile east of Marlton, Burlington County, where they wash, screen and dry the marl and sell it both for use as a fertilizer on lawns and for those who desire to process it for use in their water softening apparatus. *The Marl Mining Corporation* have a pit and plant at Marlton where they mine by hydraulic methods, screen and air dry the marl and sell it for use as a fertilizer and for any other purpose desired. *Hoffman and Caps Chemical Company,* P. O. Box 586, Mount Holly, N. J. have a pit and plant at Ewansville, Burlington County, where they mine, wash, screen and dry the marl. They treat and sell some of it ready for use in water softening and also sell some of the marl in a crude state.

During 1925 the five producers mentioned above shipped 12,728 short tons of greensand, which had been more or less refined, the value of which was $178,788. This was 1,327 tons *less* than in 1924; but involved an *increase in value* of $28,583.

For *use as a fertilizer* the washed and dried greensand is applied directly on the soil. Practically all of the greensand now being mined and sold in New Jersey is of high grade, containing around 7 per cent of potash, which is the chief constituent of value as a plant food. As the potash is combined in the form of a silicate of potassium, it does not yield its potash as readily to plants as the water soluble salts usually employed; however it has been demonstrated that certain plants, such as the red clover, are able to derive from the greensand sufficient potash for growing purposes during the first two months of their growth. See R. H. True and F. W. Geise, "Experiments on the value of greensand as a source of potassium for plant culture," Journal of Agriculture Research, vol. 15, pp 483-492, Dec. 2, 1918. There has been considerable demand for greensand for use on lawns, especially of golf links and large estates. The fact that it has no odor is regarded as an advantage for such purposes.

For *use as water softening material* the greensand in addition to the usual washing and drying is sieved so as to get a sand of which most of the grains will pass through a 20 mesh and be retained on an 80 mesh sieve. It is also treated with sodium salt, the sodium of which replaces a part of the potassium of the grains. After such treatment, the greensand when placed in properly constructed apparatus, will soften hard water as it filters through. Chemically the process is one known as base exchange, as the calcium or magnesium, the bases in the compounds that make the water hard, exchange places with sodium, the base in the active portion of the treated greensand. An almost magical feature of the process is that daily regeneration of the material can be effected by simply disconnecting the pipe from

the source of hard water and temporarily running through the spent greensand, water containing sodium chloride. The reverse process here takes place, the sodium of the sodium chloride exchanging place with the calcium and magnesium of the used material, thus making available a new supply of sodium on the greensand grains to soften more water.

As a *potential source of potash* the greensand marl is ever a material that interests those who hope that this country will someday become independent of foreign sources of potash. One of the latest developments in this connection is the combined Bureau of Soils and Moxam Process for extracting the potash from greensand by the use of sulphuric acid under controlled conditions and incidental utilization of the aluminum, iron, and silica in the form of by-products. This process is briefly outlined in a recently published book on "Potash", by J. W. Turrentine, (published by John Wiley and Sons) pp 108-113. This process appears to have much of promise in it and we await with interest its further development and possible application on a commercial scale. The Moxam experimental plant is located at Odessa, Delaware.

PEAT

While one of the minor products so far as total quantity and value is concerned, Peat is one of our mineral products that possesses some very interesting features. In some countries the use of peat as a fuel has been developed to an industry of considerable importance; but none of the New Jersey peat is so utilized. All of our peat goes into the fertilizer trade; being sold as a humus fertilizer or an ingredient of fertilizers. The output in 1925 was 31,530 tons, having a value of $160,695. This was 8,007 tons more in quantity; but $12,168 less in value than the output of 1924. The four active producers in New Jersey in 1925 were The Alphano Corporation, which has a pit and plant at Alphano near Great Meadows, Warren County, the Hypur Humus Company, located near Newton, Sussex County; the Humus Natural Manure Company, located near Branchville, Sussex County, and J. G. Marcrum of Netcong who has pits near Stanhope and Andover, both in Sussex County. *New Jersey is the leading State* in the production of peat, producing more than one third of the country's output.

MISCELLANEOUS PRODUCTS

Coke. Two operators in New Jersey were actively engaged in 1925 in the production of coke as a by-product in the making of illuminating gas. The coal from which this coke is made is obtained from Pennsylvania. One plant was that of the Camden Coke Company located at Camden, and the other that of the Seaboard By-product

Coke Company located at Kearney. The output in 1925 was greater than in 1924. The value of the coke marketed in 1925 may not be separately published but is included under the heading of "Other products" in the general table on page 4.

Fuel Briquets. Two operators in New Jersey were actively engaged in 1925 in the making of fuel briquets from waste anthracite coal shipped in from Pennsylvania. One plant was that of the Burnrite Coal Company at Newark, and the other that of the Anthracite Manufacturing Company at Trenton. As there were less than three producers, figures for production of fuel briquets in 1925 may not be separately published but the value of the output is included under the heading "Other products" in the general table on page 4.

Ground Talc and Talcose Rock. Considerable light-colored serpentine together with some associated talc is quarried each year at the quarry of the Rock Products Company near Phillipsburg, Warren County. The rock is ground to a "mineral pulp" and sold for industrial uses similar to other talcose minerals. As there is only one producer of this material in New Jersey the figures of production for 1925 may not be separately published but are included under the heading "Other products" in the general table on page 4.

Ground Quartz or "Silica". Considerable of the white quartz sand that is dug near Cedarville, South Vineland and Newport in Cumberland County and near Williamstown Junction in Camden County, is pulverized either at mills near the pits or at Trenton for use in various industies. The ground material is sold under various names, such as "ground quartz", "silica", "sand-flint", etc. The active operators in 1925 were the New Jersey Pulverizing Company, with mills at Cedarville and South Vineland; the Pennsylvania Glass Sand Company, with mills at Newport and Williamstown Junction; Golding Sons Company, with mill at Trenton; and the Eureka Flint and Spar Company whose mill is also at Trenton. The value of the output for 1925 is included under the heading "Other products" in the general table on page 4.

Ground Feldspar. While no deposits of feldspar of commercial importance have been discovered in New Jersey, large quantities of the crude mineral are brought into the State from Maine, Connecticut and elsewhere, and ground to supply the needs of the potteries. There are three concerns engaged in the producing of ground feldspar, all located at Trenton; they are the Eureka Flint and Spar Company, Golding and Sons Company, and the Trenton Flint and Spar Company. The detailed figures regarding the output of ground feldspar may not be separately published but the value for 1925 is included under the heading "Other products" in the general table on page 4.

Lime. The lime industry in New Jersey still continues to decline in importance. In former years there were many operators who burned both the white limestone and blue limestone into lime but

only two operators were active in 1925. These were M. C. Mulligan at Clinton, Hunterdon County, and E. J. Neighbor at Vernoy, Hunterdon County. The value of the lime produced in 1925 is included under the heading "Other products" in the general table on page 4.