

VIRGINIA MINERALS



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THE MINERAL INDUSTRY IN VIRGINIA IN 1957

The value of the mineral production in Virginia in 1957 was approximately \$225 million, a record high and 8 percent greater than the previous top year of 1956. The principal factors in this increase were a strong export demand for bituminous coal and a continuing highway construction program. Leading in value of production were coal, stone, cement, sand and gravel, and lime. Coal output accounted for 68 percent of the total value of the mineral production and Virginia maintained its rank as the sixth largest coal-producing State. The bulk of the coal came from Buchanan, Wise, Dickenson, and Tazewell counties and consisted of high- and low-volatile bituminous coals which were used mainly for industrial and domestic purposes. Some semianthracite coal was produced in Montgomery County and this was used for domestic purposes. Most of the coal was produced from underground mines although some coal was produced by auger and strip mining.

The production of petroleum in Virginia was small in comparison with that produced in other states, but the output increased slightly over 1956. The entire petroleum production was confined to the Rose Hill field in Lee County. The output of natural gas decreased about 17 percent in 1957, as compared with 1956. The greatest part of the production came from Dickenson and Buchanan counties; lesser amounts came from Wise, Russell, Scott, and Washington counties. Most of the pro-

duction in Buchanan County was obtained from Mississippian sandstones and limestones, and much of the Dickenson County output came from Devonian shale. A total of 20 wells were completed in Buchanan (8), Dickenson (8), Russell (2), and Wise (2) counties. Depth of the wells range from about 4,800 feet to 7,245 feet. The natural gas produced in 1957 was consumed in southwest Virginia and in Tennessee, Kentucky, and West Virginia.

The production of Portland and masonry cement increased in 1957. Lone State Cement Corporation operated a wet-process plant at South Norfolk, Norfolk County, and a dry-process plant at Cloverdale, Botetourt County. Calcareous marl and clay were used as raw materials at the South Norfolk plant and limestone was used at the Cloverdale plant. Lehigh Portland Cement Company produced masonry and Portland cement at its dry-process plant at Fordwick, Augusta County. The company mined limestone and shale for use as raw materials. Riverton Lime and Stone Company mined shales that were used to make masonry cement at its plant at Riverton, Warren County. The cement produced in Virginia was consumed mostly in Virginia, North Carolina, West Virginia, and Tennessee.

Lime production in Virginia decreased over that of 1957 although the value of this commodity increased over that of

1956. Ninety-four percent of the lime produced was used for industrial and chemical purposes and the rest for building and agricultural purposes. Part of the lime produced was utilized in Virginia and neighboring southern states for water purification, paper manufacturing, tanning processes, and preparation of calcium carbide and cyanamid. Part of the lime was shipped to Ohio, Pennsylvania, and other steel-producing states where it was used as a flux by the steel industries. Limestone was used in the preparation of lime at plants located in Frederick, Shenandoah, Giles, Montgomery, and Tazewell counties, whereas oyster shells were used in Norfolk and Isle of Wight counties.

The output of crushed stone ranked next to that of coal, both in amount of production and in value. Production was greater than in 1956 because of increased consumption in road and highway construction. Crushed stone was produced from limestone, dolomite, granite, basalt, and sandstone; 75 percent of the total output was limestone. Stone was quarried in 34 counties, with the leading counties being Botetourt, Campbell, Giles, and Frederick. Most of the stone produced was used as roadstone, concrete aggregate, and riprap. Limestone and dolomite also were used as a flux in the steel industry, for agricultural stone, and in the manufacture of Portland cement, lime, and glass. Marl from Clarke and Surry counties was produced for agricultural purposes. A special type of black limestone was quarried near Harrisonburg, Rockingham County, and crushed for use as terrazzo chips. Because this black limestone takes a polish, it is known by producers and users as marble. Quartzite was produced near Greenlee, Rockbridge County, and used for making ferrosilicon and as railroad ballast.

Because of reduced activity in the construction business, the production of such materials as sand and gravel, clays and shales, gypsum, and roofing and flagging slate decreased in 1957. Production of sand and gravel was reported by 27 counties in 1957, with the leading counties being Henrico, Fairfax, Prince George, and Rockbridge. The major part of the sand and gravel output was used in building projects and in paving projects, with other

uses being engine sand, railroad ballast, fill sand, and fertilizer fill. Most of the clays and shales produced were used in the production of building brick, drain tile, lightweight aggregate, and cement. Thirteen companies produced clays and shales at plants in 13 counties. Botetourt, Henrico, Chesterfield, and Frederick were the leading producing counties. Virginia Solite Corporation began production at its new lightweight aggregate plant near Leakesville Junction, Pittsylvania County. Roanoke-Webster Brick Company, Inc., built a new plant at Somerset, Orange County, to manufacture building brick of all kinds and sizes. Gypsum was produced by United States Gypsum Company at Plasterco, Washington County, and used at the company mill there in the manufacture of calcined gypsum, gypsum board, and other building products. This company also operated a calcining plant at Norfolk which used both domestic and foreign gypsum. Roofing and flagging slates were produced near Arvonnia, Buckingham County, by Williams Slate Company, Arvonnia-Buckingham Slate Company, and LeSueur-Richmond Slate Corporation. Slate granules for use by the roofing industry were produced by Blue Ridge Slate Corporation at plants at Esmont, Albemarle County, and Arvonnia, Buckingham County.

The production of some of the mineral raw materials used by the glass and ceramic industries increased during 1957, while production of others decreased. Virginia continued to be the only producer of aplite in the United States and output of this material increased slightly. The International Minerals and Chemical Corporation, Consolidated Feldspar Department, produced aplite in Nelson County near Piney River and the Riverton Lime and Stone Company, Dominion Minerals Division, produced aplite in Amherst County from a mine located just south of Piney River. This material, a natural mixture of feldspar and quartz, is processed at each company's plant before shipment to glass manufacturers. Both soda and potash feldspar were produced by Clinchfield Sand and Feldspar Corporation from three mines in Bedford County. These materials are ground at the company's mill near Bedford City before shipment to ceramic and glass manufacturers. Kyanite Mining Corporation began

TABLE 1. - Mineral production in Virginia, 1956-57 1]

Commodity	1956		1957	
	Short tons (unless other- wise stated)	Value (thousands) (2)	Short tons (unless other- wise stated)	Value (thousands) (2)
Beryllium concentrate..... pounds	1,349	\$ (2)	--	--
Clays.....	1,000,019	1,033	893,255	986
Coal.....	28,062,775	138,127	3]29,505,579	3]153,959
Gem stones..... pounds	--	--	320	(2)
Lead (recoverable content of ores, etc.)..	3,035	953	3,143	899
Lime.....	512,346	5,926	510,216	6,029
Manganese ore (35 percent or more Mn)...				
..... gross weight	20,231	1,902	12,655	1,058
Marl, calcareous.....	10,522	12	(4)	(4)
Mica, sheet..... pounds	396	6	529	6
Natural gas..... million cubic feet	2,926	811	3] 2,500	3] 700
Sand and gravel.....	7,783,103	9,240	6,298,269	8,854
Silver (recoverable content of ores, etc.)..				
..... troy ounces	1,874	2	1,745	2
Slate.....	31,894	1,035	(4)	1,003
Stone.....	14,081,904	23,076	5]14,243,510	5] 21,158
Zinc (recoverable content of ores, etc.)..	19,196	5,181	(4)	(4)
Miscellaneous 6]		24,930		33,429
Total Virginia 7].....		208,806		224,531

1] Production as measured by mine shipments, sales or marketable production (including consumption by producers).

2] Less than \$500.

3] Preliminary figure - subject to revision.

4] Figure withheld to avoid disclosing individual company confidential data.

5] Excludes certain stones, value for which is included with items that cannot be disclosed.

6] Aplite, portland cement, masonry cement, hydraulic lime (1956), feldspar, gypsum, iron oxide pigments, kyanite, manganese ore-ferruginous (1956), petroleum, pyrites, salt, soapstone, stone (dimension miscellaneous, and dimension sandstone 1957), titanium concentrate, and values indicated by (4).

7] The total has been adjusted to eliminate duplicating the value of clays and stone.

Data from U. S. Bureau of Mines

production from a new mine and mill on Willis Mountain in Buckingham County, and continued production from its Baker Mountain mine in Prince Edward County. Most of the kyanite was consumed by ceramic and refractory industries. Glass sand was produced by Locher Silica Corporation near Glasgow, Rockbridge County, and by Virginia Glass Sand Corporation near Gore, Frederick County.

Salt, pyrrhotite, and iron oxides were produced and used by mineral industries within the State. Salt was produced from brines pumped from underground rock-salt beds at Saltville, Smyth County, by Olin Mathieson Chemical Corporation, and used in making chlorine, soda ash, and other chemicals. Pyrrhotite was mined by the Allied Chemical Corporation, General Chemical Division, and was used to make sulphuric acid at its plant located in Pulaski. Iron oxides were mined by American Pigment Corporation near Hiwassee, Pulaski County. The oxides were used to produce paint pigments at the company plants located in Hiwassee and in Pulaski. Blue Ridge Talc Company produced both natural pigments and manufactured pigments at Henry, Franklin County.

In addition to slate, the dimension stone producers in Virginia utilized soapstone, "Virginia greenstone," and sandstone during 1957. Alberene Stone Corporation of Virginia quarried soapstone near Alberene, Albemarle County, and near Schuyler, Nelson County. Ground soapstone was produced by the Alberene Stone Corporation and the Blue Ridge Talc Company at Henry, Franklin County, for use by rubber and roofing industries, in insecticides, and for foundry facings. Virginia Greenstone Company, Incorporated, produced "Virginia greenstone," a rock closely related to soapstone, at Lynchburg, Campbell County. Dimension sandstone was produced in Fauquier County near The Plains by J. W. Costello and near Broad Run by J. E. Corum.

A small amount of sheet mica was produced in Virginia and sold through the government General Services Administration at Spruce Pine, North Carolina. Hand-cobbed and full-trim mica was produced in Amelia County and full-trim mica

from Goochland and Henry counties. A small quantity of amazonite was produced as a by-product of the Amelia County mica operations. Unakite and epidote were produced in Madison County and sold for gem stones.

Two mineral industries purchased raw materials outside of the State for processing plants at Hopewell and Newport News. Perlite, a special type of volcanic rock, was shipped to Virginia from the Western United States and processed by the Virginia Perlite Corporation at Hopewell. When heated, perlite expands into a lightweight material that is used in making plaster. The Richmond Mica Corporation used both domestic and foreign mica at its wet-process plant at Newport News. The ground mica was used in such products as paint, rubber, wallpaper, and plasters.

Nitrogen compounds were manufactured by Allied Chemical and Dye Corporation, Nitrogen Division, at Hopewell. Ammonia, ammonium nitrate-limestone, solid and liquid ammonium nitrate, and urea solutions were produced and used mainly as fertilizer and fertilizer compounds.

The production of lead and zinc ores continued to increase during 1957; although the value per pound was less than in 1956. Two new mines were put into production in 1957; Tri-State Zinc Company began production of zinc ore near Timberville, Rockingham County, in early 1957, and New Jersey Zinc Company began production of lead and zinc ores from Ivanhoe, Wythe County, in the fall. New Jersey Zinc Company continued the production of lead and zinc ores from its mine at Austinville, Wythe County.

Zinc ore concentrates from the Austinville mill were shipped to smelters at Palmerton, Pennsylvania, and East Chicago, Illinois, for metal recovery. Lead ore concentrates from the same mill were shipped to Palmerton, Pennsylvania, and Federal, Illinois, for metal recovery. Zinc ore concentrates from the Timberville mill were shipped to Josephtown, Pennsylvania.

The production of manganese ore declined 37 percent in tonnage in 1957, as

compared with 1956. All of the ore produced was metallurgical grade of 35 percent or more manganese content. Most of the ore was sold to the General Services Administration under the government carlot program for stockpiling at Riverville, Amherst County. The principal producing counties were Smyth, Augusta, and Appomattox, with production also coming from Bland, Campbell, Frederick, Giles, and Rockingham counties.

American Cyanamid Company continued to produce ilmenite, an ore of titanium, in Amherst County near Piney River. The ilmenite was utilized by the company at its plant at Piney River, Nelson County, for the manufacture of paint pigments. Late in the year, the Metal and Thermit Corporation began recovery of ilmenite and rutile at its mine and plant situated near Montpelier, Hanover County.

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SAFETY AWARD

The Kimballton mine of the Standard Lime and Cement Company at Kimballton, Giles County, was awarded a Certificate of Honorable Mention in the National Crushed Stone Association's safety competition for 1957. This operation worked 82,993 man-hours with an injury-free record and was one of 45 plants in the United States to attain an injury-free record.

The Kimballton plant of the National Gypsum Company was awarded a Certificate of Honor in the National Lime Association's safety competition for 1957 for its injury-free record. The plant worked 353,240 man-hours without any lost-time disabling work injuries. It was one of nine calcining plants in the United States to receive the award.

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RECENT TOPOGRAPHIC MAPS

The following topographic maps have been published and copies are available from this office at a cost of 30 cents each: Bland, Wheeler, Metomkin Inlet, Wachapreague, and Accomac. The Bland map is published

on a scale of 1:62,500 and has a contour interval of 40 feet. It is a 15-minute quadrangle and covers parts of Bland, Tazewell, and Wythe counties, Virginia, and part of Mercer County, West Virginia. The Wheeler map is published on a scale of 1:24,000 and has a contour interval of 20 feet. It is a 7-1/2-minute quadrangle and covers parts of Lee County, Virginia, and Claiborne County, Tennessee. The Metomkin Inlet, Wachapreague, and Accomac are published on a scale of 1:24,000 and have a contour interval of 10 feet. These are 7-1/2-minute quadrangle maps of the part of Accomac County previously covered by the 15-minute Accomac quadrangle.

The following quadrangle maps were previously published on a scale of 1:31,680 but are now available from this office on a scale of 1:24,000: Littleton, Pendleton, Waverly, Manry, Sebrell, Vicksville, Savedge, Disputanta North, Disputanta South, and Annandale. All are 7-1/2-minute quadrangles with a contour interval of 20 feet. The Littleton map covers part of Sussex County, the Pendleton map covers part of Louisa County, and the Waverly map covers part of Surry County. The Manry, Sebrell, and Vicksville maps cover part of Sussex and Southampton counties. The Savedge and Disputanta North maps cover part of Prince George and Surry counties, and the Disputanta South covers part of Prince George, Surry, and Sussex counties. The Annandale map covers part of Fairfax County.

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STAFF NOTE

Linwood H. Warwick observed the fiftieth anniversary of his continuous employment with the Commonwealth of Virginia on October 4, 1958. During this half-century, he has worked under six State Geologists and has experienced the growth and development of the Division of Mineral Resources from its early beginnings as the Virginia Geological Survey. His first position was that of stenographer under Dr. Thomas L. Watson. He has filled various positions in the organization, including that of acting head of the Survey in 1928-1929. He has been Office Administrator since

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1929. He continues to maintain an active schedule and a keen interest in the geology of Virginia.

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LIGHTWEIGHT AGGREGATE PLANT

The Clinchfield Coal Company, Dante, Virginia, has scheduled construction of a \$1.5 million lightweight aggregate plant. Raw material for the aggregate, to be named Clinchlite, will be the shale washed from coal in the company's new preparation plant which processes coal from their Moss No. 3 mine.

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AVAILABLE

MINERAL RESOURCES OF VIRGINIA by Thomas L. Watson

Commemorative Edition of the Virginia Jamestown Exposition 1907, 582 pages, 83 plates, and 101 figures. Price: Good copies, \$8.00 each, damaged copies, \$4.00.

Copies of the "Mineral Resources of Virginia" by T. L. Watson are available. This out-of-print volume contains descriptions of mineral resources and deposits and

includes locations by region and county. In it there are a number of chemical analyses, tables, and data on uses of mineral materials. The book is a standard reference to the geology and mineral resources of Virginia.

Orders may be addressed to the Division of Mineral Resources, Box 3667, Charlottesville, Virginia. Payment by check, money order or cash (stamps will not be accepted) should accompany each request.