VIRGINIA MINERALS

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF CONSERVATION AND ECONOMIC DEVELOPMENT
Richmond, Virginia

Published quarterly by the DIVISION OF MINERAL RESOURCES
Natural Resources Building, McCormick Road, Charlottesville, VA 22903

Vol. 29 February 1983 No. 1

LARGE GEM TOPAZ CRYSTAL DISCOVERY

Wm. F. Giannini and D. Allen Penick, Jr.

A large topaz crystal was found in Virginia, September 14, 1982 (Figure 1). The crystal, believed to be the largest gem quality topaz crystal found in North America, was discovered by veteran mineral collector, Peter McCrery of Richmond, Virginia. This magnificent mineral specimen was found in the dump of the Herbb No. 2 mica mine in Powhatan County. The mine, located on the Fine Creek Mills 7.5-minute quadrangle, is 23.95 miles by road west of Richmond, 3.95 miles northeast of Flat Rock and 0.38 mile along a woods road north of State Route 716 (Figure 2).

The 8.9-pound crystal measures 10.9 inches long by 3.5 inches thick and has a virtually flawless, transparent, colorless interior. It is terminated on one end and broken along a basal cleavage plane on the other. The crystal contains two small liquid inclusions that are probably carbon dioxide based on previous studies of inclusions in topaz (Schlegel, 1957).

Subsequent finds at the Herbb No. 2 by

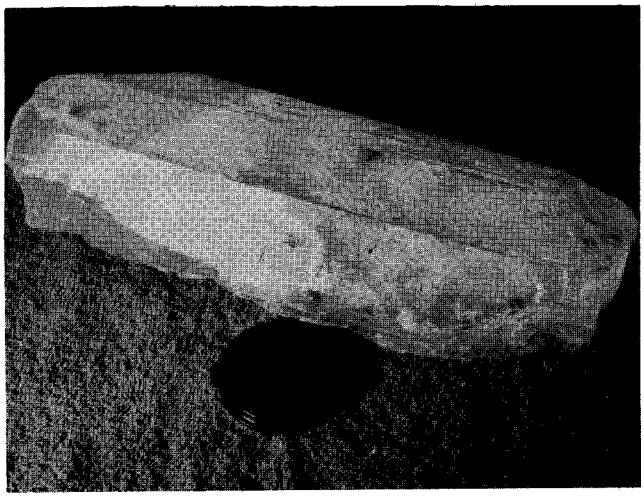


Figure 1. Gem quality topaz crystal weighing 8.9 pounds discovered Sept. 14, 1982, at the Herbb No. 2 mica mine, Powhatan County, Virginia.

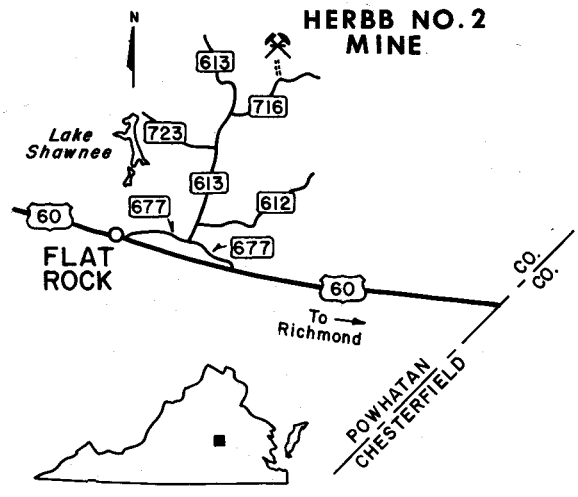
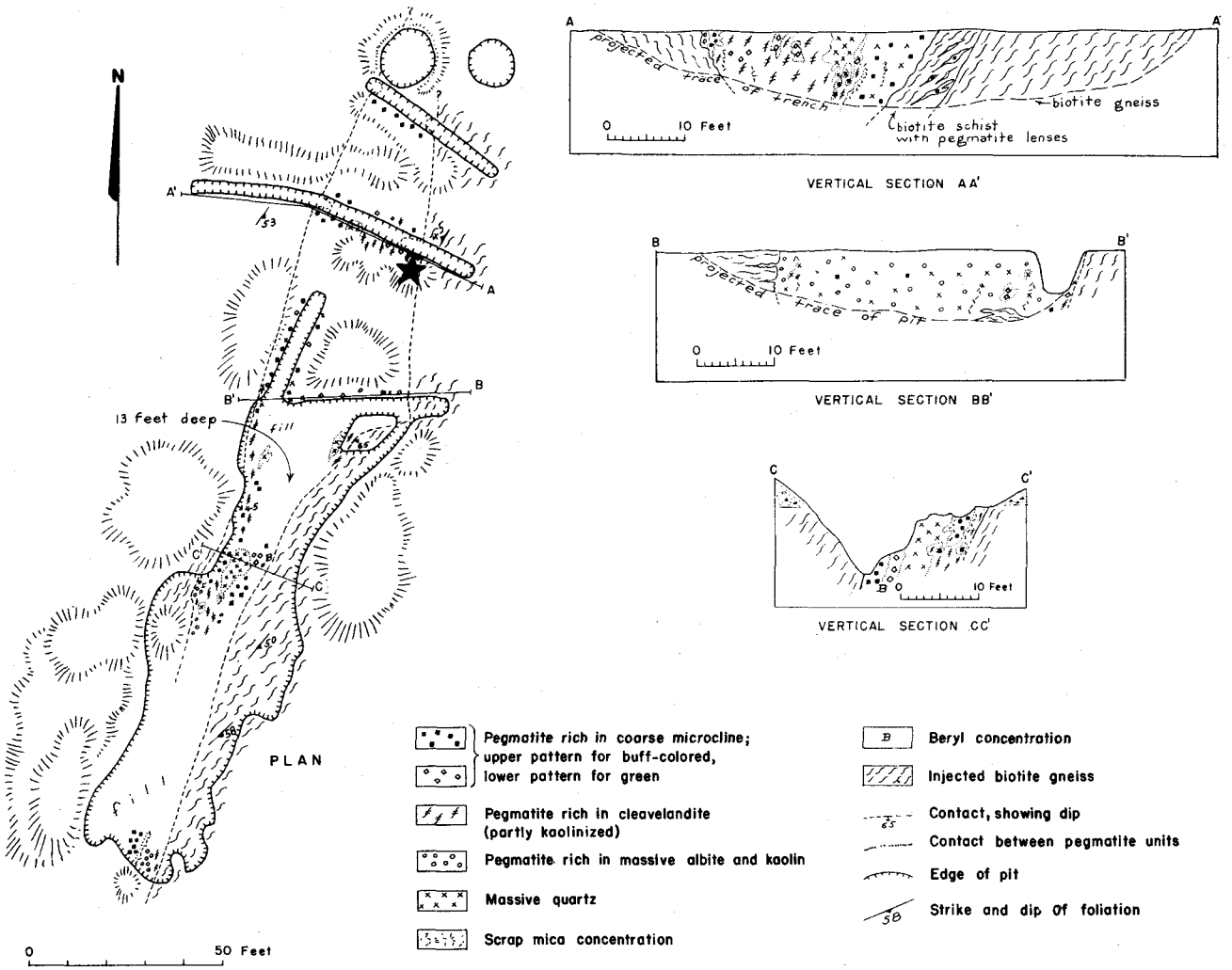


Figure 2. Location map of the Herbb No. 2 mine; Powhatan County.



Mapped March 1944, revised August 1944 and March 1945.

Figure 3. Geologic map and sections of the Herbb No. 2 mine, Powhatan County. Discovery site of 8.9-pound gem topaz is indicated by star. (Modified after Brown, 1962).

Peter McCrery and an owner of the mine, Donald Richardson, include three large pieces of clear, gemmy, colorless to pale blue topaz crystal weighing up to one pound that were broken from the 8.9-pound topaz and more than 60 small pieces of transparent, colorless, gem quality topaz believed to be parts derived from the larger crystal. The original crystal probably weighed around 12 pounds (Pettinger, 1982). They have also collected numerous crystals of tantalum minerals from the dump and from the undisturbed pegmatite. Two major mining companies have expressed an interest in the deposit because of the presence of these minerals.

The pegmatite body at the Herbb No. 2 mine was explored and briefly worked in 1944 by Carl Fleming of Colonial Homes, Inc., Richmond, Virginia. The deposit, very similar to the famous Rutherford and Morefield pegmatites near Amelia, Virginia, has a maximum thickness of 40 feet and is 240 feet long, strikes N. 20° E., dips steeply eastward and plunges southward (Figure 3). Quartz, beryl, topaz, cleavelandite albite, tantalite-columbite, muscovite, spessartite garnet, plagioclase feldspar weathered to kaolin, blue-green (amazonite) and buff to pink perthite and biotite have been reported from this pegmatite (Brown, 1962; Dietrich, 1970; Griffitts and others, 1953; also note news release at the end of this publication). While mining the pegmatite in 1944, Carl Fleming recovered a broken beryl crystal about 5 feet long and 27 inches thick and part of another, weighing approximately 300 pounds and measuring 14 inches by 20 inches (Brown, 1962). This specimen is presently on display at the Virginia Division of Mineral Resources, Charlottesville, Virginia (Figure 4).

The Powhatan Land Company owns approximately 170 acres containing the Herbb No. 2 mine. Donald Richardson, a company offi-

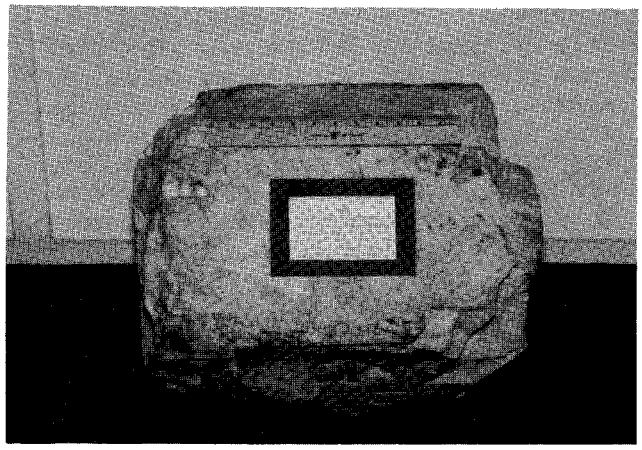


Figure 4. Beryl crystal discovered by Carl Fleming at the Herbb No. 2 mine. The 300-pound specimen is presently on display at the Virginia Division of Mineral Resources, Charlottesville, Virginia.

cial, should be contacted by persons desirous of additional information concerning the gemmy topaz crystal and the pegmatite, or who wish to visit the Herbb No. 2 mine. His mailing address is Route 5, Box 178, Powhatan, Virginia, 23139, and his phone number is (804) 598-4031. The mention of the Herbb No. 2 mine in this report does not give one permission to enter and collect without permission of the owner. It should be stressed that before attempting to collect any materials on private property, an individual should make himself known to the owner and obtain permission. Entering private property without permission violates trespass laws and is punishable under law.

We wish to acknowledge the following persons for their assistance prior to and during preparation of this article: Howard Freeland (photographs), Peter McCrery, and Donald Richardson.

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COAL SEMINAR HELD

In 1980 upwards to 1.43 billion dollars worth of coal was produced in Virginia, making coal by far the most valuable mineral resource produced in Virginia. Extensive coal reserves remain in the 75 or more coal beds that either crop out in valleys or on hillsides or which are present in the subsurface. A seminar was held on November 10, 1982, dealing with developments in coal in Virginia during the past year. The meeting was held on the Virginia Polytechnic Institute and State University (VPI&SU) campus in Blacksburg, Virginia. One hundred nineteen people interested and/or involved in Virginia coal registered. Additionally, there were at least ten newspaper reporters and television crew members on hand during much of the day. The seminar was sponsored by the Virginia Division of Mineral Resources (VDMR) in Charlottesville and co-sponsored by the Virginia Center for Coal and Energy Research (VCCER) in Blacksburg and and the Virginia Coal Council (VCC) of Richlands, Virginia.

The seminar was called to order at 8:30 a.m. in the Donaldson Brown Center for Continuing Education at VPI&SU by D.P. Roselle, Dean of Research and Graduate Studies. He listed the several institutes that are involved in coal-related studies and which support the Virginia Center for Coal and Energy Research. These include the Mining and Mineral Resources Research Institute, the Coal Institute, the Energy Institute, and the Extension and Information Institute.

R. C. Milici, State Geologist for Virginia, reviewed coal research projects being carried on by the Virginia Division of Mineral Resources (VDMR). These include a thorough sampling program of coal beds in Virginia, the mapping of 7.5-minute quadrangles in southwestern Virginia, drilling to study amounts of methane gas associated with coal beds, a survey of the nature and extent of southwestern Virginia coal resources, and re-evaluation of the Valley coal fields in the Blacksburg area.

J. A. Henderson, geologist in charge of the VDMR coal program, summarized recent coal reserves and production figures in the southwestern part of Virginia. He described areas of past production, namely the Valley fields in Montgomery County and the Triassic basin in the Richmond area. He noted that all of Virginia production is now from the Southwestern Virginia fields, including part or all of Buchanan, Tazewell, Dickenson, Russell, Scott, Lee, and Wise counties.

Ms. M. D. Carter, manager of the National Coal Resources Data System (NCRDS) and Coal Commodity Geologist for the U. S. Geological Survey, described the requirements and uses of NCRDS which "provides on-line access to a common data base containing location, quantity, and physical and chemical characteristics of coal and coal-related rocks. Areal data files contain published coal resource and chemical data on an areal basis, such as state, county, township, or coal field. Point source data files (e.g., field observations, drill-hole logs) include geodetic location (latitude/longitude); bed thickness; thickness of overburden; moisture; ash; sulfur; major-, minor, and trace-element content; heat value; and characteristics of overburden, roof, and floor rocks. NCRDS graphics programs manipulate the point source data to produce coal-resources maps and coal-development-potential maps."

Substituting for J. Medlin, Chief of the USGS Branch of Coal Resources, Carter referred further to the NCRDS data base, as well as to cooperative programs with state geological surveys, as, for instance, the USGS-VDMR joint funding of geologic mapping of 7.5-minute quadrangles in the coal-bearing areas of southwestern Virginia.

M. Bartholomew, VDMR geologist, reviewed the geologic setting and coal resources of the Valley coal fields which lie in the Blacksburg area, east of the major mining operations in southwestern Virginia. Fairly extensive mining was carried on in the Valley fields area, but thicker beds of coal exposed in valley walls, and more favorable structure have combined to downgrade the Valley fields in regard to their former prominence as coal-producing areas.

C. B. Stanley and A. P. Schultz, VDMR geologists, evaluated the possible significance of methane in the Valley coal field (Montgomery County). Three core holes were drilled by VDMR in the Blacksburg area to depths ranging from 1110 to 1462 feet. Gas samples were collected and studied. Final results will be made available by the VDMR as soon as the study is completed.

C. E. Bagge, President, National Coal Council, spoke after lunch to the seminar registrants and presented a strong statement in behalf of coal-slurry pipelines. The afternoon program was presided over by J. R. Lucas, Chairman, VPI&SU Mining and Minerals Engineering Department who also described projected uses for the one-million-dollar mining research grant recently received by VPI&SU.

O. Yucel of the Civil Engineering Department, VPI&SU, presented a study on the preliminary feasibility of coal-slurry pipelines in Virginia. Yucel concluded "that there are no extraordinary technical or environmental problems associated with the concerned Virginia coal slurry pipeline."

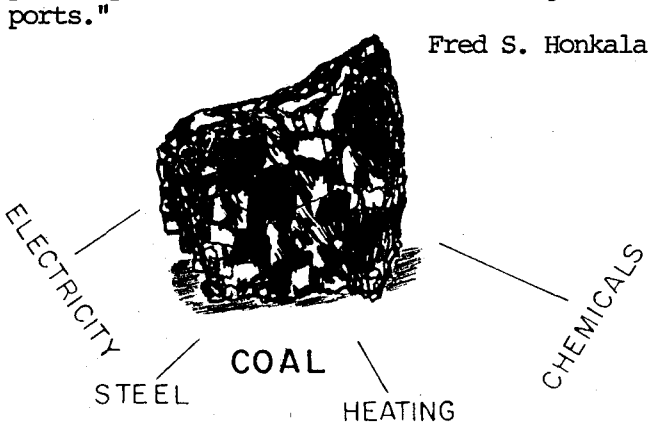
Other papers presented in the afternoon included one by G.P. Wilkes, geologist, VDMR on the geologic setting and coal resources of the Richmond Triassic basin. He went on to note that recoverable methane in the Richmond basin may be as high as 350 billion cubic feet, enough to supply Richmond's gas needs for many years to come. Wilkes's paper was followed by one by Ms. S. Wingfield of the U. S. Dept. of Commerce who emphasized "a side of coal not normally covered in traditional presentations on coal or its marketing: The effects of chemistry of coal on boiler design and operation."

Some papers dealt with research. D. S. Walia of the United Coal Company described the UCC's research on combustion of a coal-water mixture.

J. Amans, of the Consolidation Coal Company described the company's new No. 1 mine near Grundy, Virginia. He concluded that "despite the depressed state of metallurgical coal markets, Consol is confident that demand will improve in future years. The low volume coal from the No. 1 mine is the best in the world, and by beginning development now, we expect to be in good position to participate in future market growth."

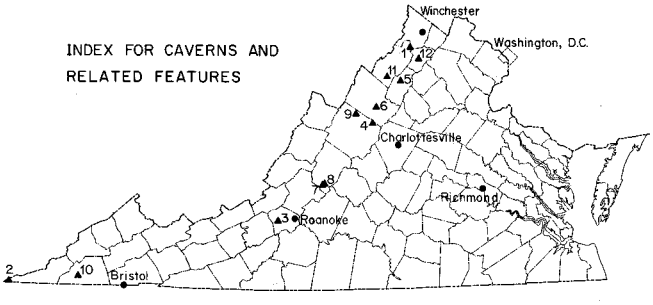
Walter R. Hibbard, Jr., Director, Virginia Center for Coal and Energy Research (VCCER) summarized metallurgical coal production and exports for Virginia by concluding that "the metallurgical coal market is presently an erratic buyers market with more production capacity than demand and a growing sensitivity to prices resulting from the unstable world economic situation. Our national coal suppliers, because of rising mine, railroad, port and shipping costs, now charge the highest worldwide delivery prices which will make this country a residual supplier and possibly vulnerable to more foreign imports."

Fred S. Honkala



COMMERCIAL CAVERNS AND RELATED FEATURES IN VIRGINIA

Dave Hubbard



1. Battlefield-Crystal Caverns, Shenandoah County, 0.5 mile northeast of Strasburg, on U. S. Highway 11, or Interstate 81: interchange 75, 1 mile southwest on U. S. Highway 11. Tours by appointment only, phone Wayside Inn (703) 869-1797. Group rates.

2. Cudjo's Cave, Cumberland Gap National Historical Park, Lee County, about 800 feet from the Virginia-Tennessee state line on U. S. Highway 25E, north of Cumberland Gap, Tennessee. Caverns administered by Lincoln Memorial University. Open all week March through October, weekends November, December, and March, closed January and February. Group rates.

3. Dixie Caverns, Roanoke County, Interstate 81: interchange 39 south, or 7 miles west of Salem on U. S. Highway 11. Open all year. Group rates.

4. Grand Caverns Regional Park, Augusta County, near Grottoes off U. S. Highway 340 or Interstate 81: interchange 60, 8 miles east on State Route 256. Open mid April through mid October. Group rates.

5. Luray Caverns, Page County, west Main St. Luray, on U. S. Highway 211. Open all year. Group rates.

6. Massanutten Caverns, Rockingham County, 0.5 mile northeast of Keezletown and 6 miles southeast of Harrisonburg via U. S. Highway 33 and State Road 620 from Interstate 81: interchange 64. Open Memorial to Labor Day: 10 to 6 daily, fall and spring: 11 to 5 daily, winter: 12 to 5 Saturday and Sunday. Group rates.

7. Natural Bridge, Rockbridge County, 3.5 miles south on U. S. Highway 11 from Interstate 81: interchange 50, or 1.5 miles north on U. S. Highway 11 from interchange 49. Open all year. No group rates.

8. Natural Bridge Caverns, Rockbridge County 3 miles south on U. S. Highway 11 from Interstate 81: interchange 50, or 2 miles north on U. S. Highway 11 from interchange 49. Open March through November all week, December through February: Friday, Saturday, and Sunday. Group rates.

9. Natural Chimneys Regional Park, Augusta County, 1 mile north of Mt. Solon off State Road 731 and 10.5 miles west of Bridgewater Exit (interchange 61) Interstate 81 via State Road 257, U. S. Highway 42, and State Road 747. Open mid April through mid October, however gates often left open off season for nonfee viewing of chimneys. Group rates.

10. Natural Tunnel State Park, Scott County, 12.5 miles west of Gate City on U. S. highways 58 and 23 and 1.3 miles north on State Road 871. No fees to view tunnel. Opened all year for viewing, park facilities closed December through April.

11. Shenandoah Caverns, Shenandoah County, Interstate 81: interchange 68, 1 mile northwest on State Road 730, or 4 miles northwest of New Market on U. S. Highway 11 and 1.5 miles northwest on State Road 730. Open all year. Group rates.

12. Skyline Caverns, Warren County, 1 mile south of Front Royal on U. S. Highway 340 south from Interstate 66. Open all year. Group rates.

For information on noncommercial caves and caving contact the National Speleological Society, Cave Avenue, Huntsville, AL 35810.

Virginia Caves are protected by State Law (Code of Virginia 10-150.11 et seg.).

It is illegal to:

- -write or mark on the walls
- -litter or dump spent carbide
- -break or remove mineral formations
- -disturb bats or other living organisms
- -remove or disturb historic or prehistoric artifacts or bones

Copies of this law may be obtained from:

Virginia Cave Commission
P. O. Box 7017
Richmond, Virginia 23221

OLD KING COAL

S. O. Bird

Coal is king of Virginia's natural resources. The history of its production and use is a history of the Industrial Revolution, and coal's future role in world economy will be more important than its past. Coal's share of the national energy product was about 19 percent in 1980; it is projected to be about 30 percent by 1990 (Energy Information Administration, 1981). Virginia ranks fifth in the nation in bituminous coal production (the order for 1980 was Kentucky, West Virginia, Pennsylvania, Illinois, Virginia). Because the State still has large quantities of minable coal in the ground (more than 3.4 billion short tons demonstrated reserve base on January 1, 1980), it is to be assumed that Virginia's coal production will grow in accordance with its projected increase in use. U. S. production in 1980 was nearly 830 million short tons; Virginia's share was about five percent. Some eleven percent of the total was exported. (Data sources were Energy Information administration, 1982A and 1982B.)

Early reports of the Virginia Geological Survey, which began its modern operation under Dr. Thomas L. Watson in 1908, indicate that the dollar value of coal and coke production displaced that of iron ore and pig iron production in Virginia as the number one mineral resource in 1910, when the coal and coke value was about 8.5 million dollars. Since that time, coal has remained the number one mineral asset in Virginia. The 1980 dollar value for Virginia coal production was about 1.4 billion dollars and production was about 41 million short tons. The Virginia Survey (which became the Virginia Division of Mineral Resources in 1957) began publishing detailed reports on coal in 1914, when Charles Butts' excellent report entitled "The Coal Resources and General Geology of the Pound Quadrangle in Virginia," was issued.

In the years since 1914, some 13 major map reports on the coal resources of Virginia have been published by the Division; a like number of reports on areas in the state have been published by the United States Geological Survey. A coal bibliography for Virginia will be published this year by the Division.

The price of coal was only 4 to 5 dollars per ton from about 1950 to 1970. After the oil embargo of 1973-74, the price of coal rose from about $8 per ton to today's average price of about $39 per ton. Thus, the price of coal began to keep ahead of inflation for the first time in several decades

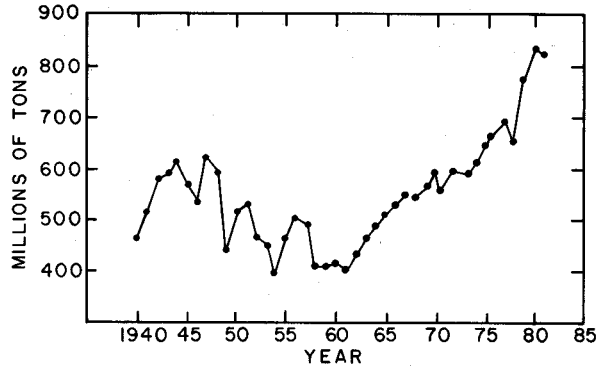


Figure 1. U. S. coal production 1940-1981. (After Gluskoter, 1982). The 1958 sag in production reflects the economic recession of that time. Production through August of 1982 was running ahead of that of 1981, depite the economic slow-down of this period.

beginning in the 1970's (Gluskoter, 1982), and coal production continued the increase begun in the 1960's (Figure 1).

Coal geology today is a sophisticated business. Physical and chemical characteristics of coal, rank and ash content, as well as thickness and distribution data, together with ease of removal, the ease of land reclamation, and possible effects of mining operations on water quality are basic to all aspects of the work. In addition, geologists may need to predict floor and roof conditions that will affect drift or surface mining of the coal. Sulfur content, the single most detrimental factor limiting the possible uses of coal, is obviously important in predicting values of minable coal (Virginia's coal is relatively free from sulfur, Henderson and others, 1981). Other, more subtle, chemical characteristics are also important: some metals affect the activity of catalysts used in converting coal to other products, and certain organic constituents help to determine the coking quality of coal. The coal geologist today needs

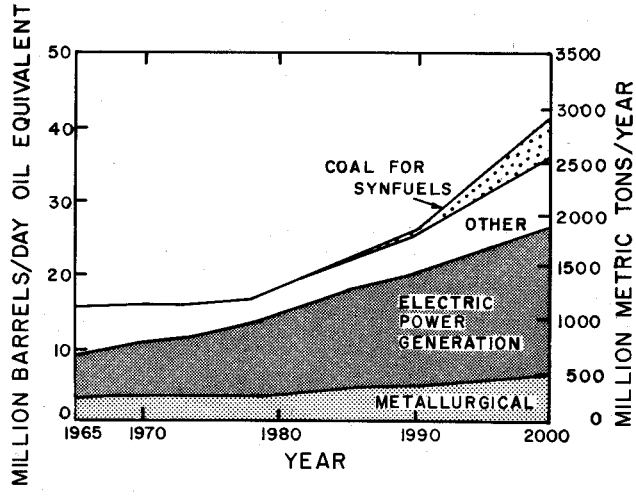


Figure 2. Projected world coal demand, excluding communist Europe and Asia. (From Exxon Corporation, 1980).

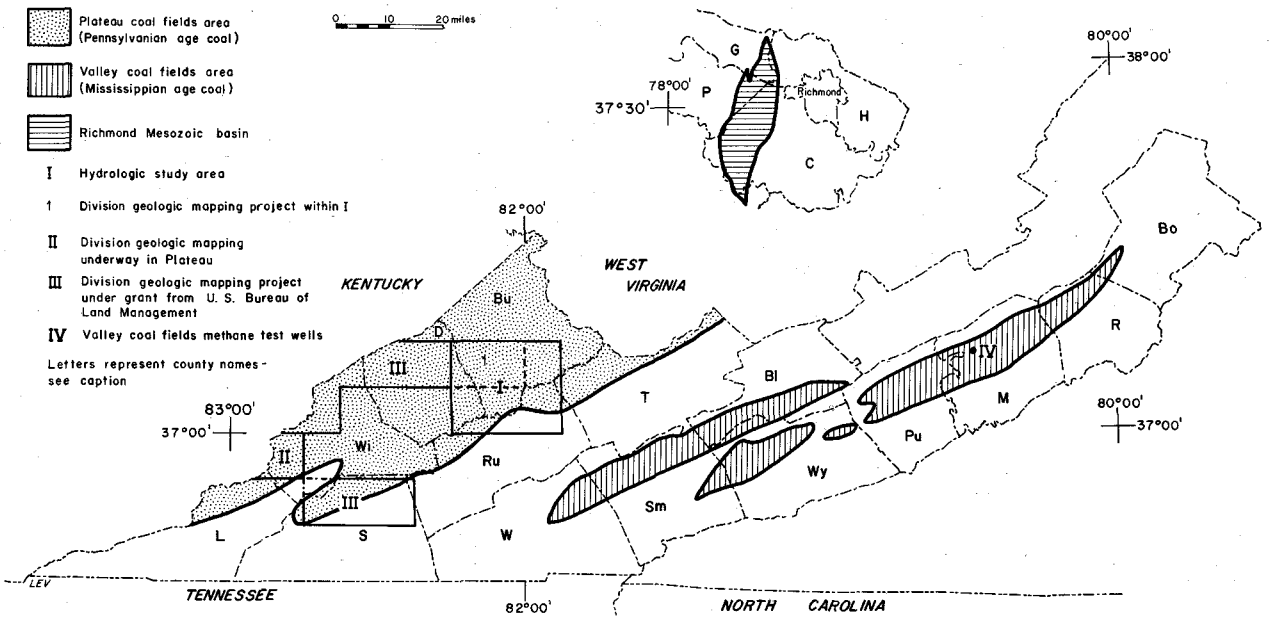


Figure 3. Areas of ongoing coal research by Division geologists. Most coal in the Valley lies at depth because the beds are folded. Abbreviations used for counties follow: Bu, Buchanan; Bl, Bland; Bo, Botetourt; C, Chesterfield; D, Dickenson; G, Goochland; H, Henrico; L, Lee; M, Montgomery; P, Powhatan; R, Roanoke; Ru, Russell; S, Scott; Sm, Smyth; T, Tazewell; W, Washington; Wi, Wise; Wy, Wythe.

a wealth of data in evaluating and predicting coal reserves.

Being aware of the current demand for coal and anticipating a growing need for the resource (Figure 2), the Virginia Division of Mineral Resources has accelerated its research on Virginia coals. Recent publications on coal by the Division are those by Henderson (1979), Henderson and others (1981), Wilkes (1982), Milici and others (1982), and Mitchell and others (1982). In November of 1982, the Division sponsored its first Coal Seminar. The meeting was held at Blacksburg and included invited presentations from the Division, V.P.I. and S. U., the United States Geological Survey, and private agencies. (See "Coal Seminar Held" in this issue of Virginia Minerals for details on the meeting.)

Among other recent and ongoing activities of the Division on Virginia's coal resources not previously mentioned are the following. (1) Preparation of two 7.5-minute quadrangle maps and maps of lineament systems in southwestern Virginia as part of a coal and water resource study being conducted by the Division and the United States Geological Survey (Figure 3, I, 1) and preparation of other quadrangle maps (Figure 3, II); (2) preparation of coal resources maps under contract with the U. S. Bureau of Land Management for twenty-four 7.5-minute quadrangles in Plateau and Valley coal fields (Figure 3, III); (3) preparation of a compilation geologic map including distribution of coal beds, of Wise County; (4) evaluation of the Valley coal field methane resource near Blacksburg, Virginia under contract with the U. S. Department of Energy (Figure 3, IV); (5) evaluation of the Valley coal resources of Pulaski and Montgomery counties; (6) preparation of a map report of the Richmond Mesozoic basin, including evaluation of the methane resource associated with coal in the basin (Figure 3); (7) study of plant spores in various Mesozoic basins in Virginia in an attempt to correlate coal beds in the basins (being carried out by Division and U.S.G.S. geologists); (8) collection of samples and compilation of physical and chemical data on coal samples throughout the State in cooperation with the U.S.G.S.; and (9) maintaining and enlarging data on Virginia coals in the National Coal Resources Data System stored on a computer at the U.S.G.S. in Reston, Virginia. The data from (9) will be used in evaluating coal resources in the State and will be used in other ways, including preparation of reports on coal quality as in Henderson and others (1981).

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LARGE QUARTZ CRYSTALS FROM ROCKINGHAM COUNTY

James L. Beaver, Jr. and Barry W. Miller

In April 1979, a number of large (up to 24 by 40 centimeters), milky, and commonly singly-terminated quartz crystals were found associated with the Beekmantown dolomite east of Brocks Gap in western Rockingham County (Figure 1) within the Shenandoah Valley. Although small quartz crystals are commonly associated with carbonate rocks in the Shenandoah Valley, these were of exceptional size. Large crystals were first noticed in rock piles in a steep, wooded ravine adjacent to the Shenandoah River;across the river from State Highway 259. The large crystals were not found in situ or associated with matrix material. One float specimen containing moderate-sized quartz crystals (5.2 centimeters across) found northwest of the discovery area was composed of highly brecciated, saccharoidal dolomite

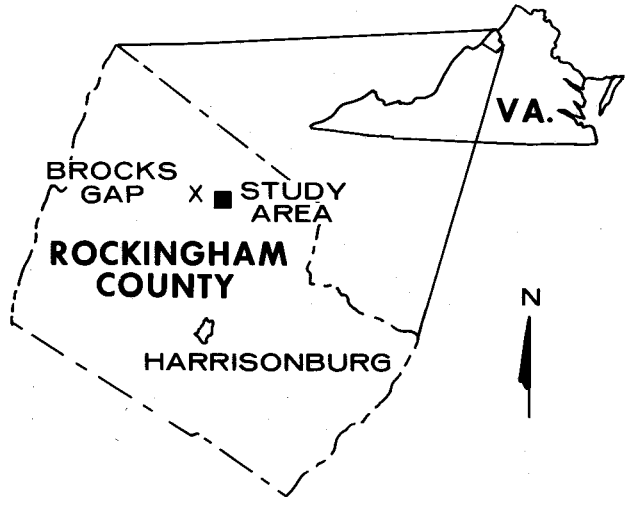

Figure 1. Index map showing location of the study area.

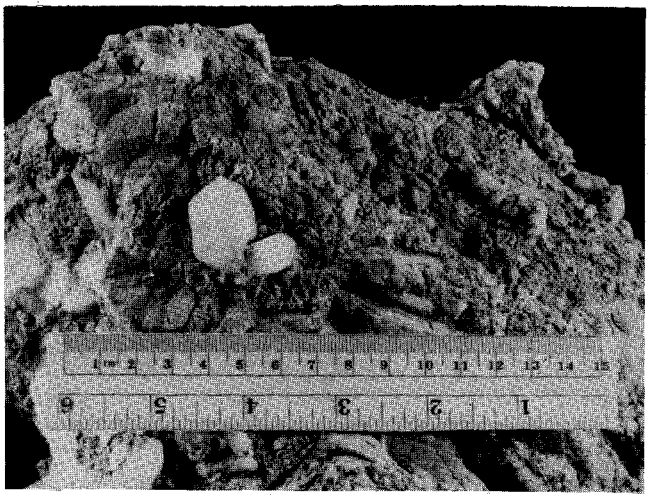

Figure 2. White quartz crystals in gray dolomite matrix.

fragments cemented by veins of white, crystalline dolomite. These milky quartz crystals were on small, gray, rhombohedral dolomite crystals within a cavity (Figure 2). Dolomite is the only mineral that is commonly associated with the large quartz crystals.

The large quartz crystals found east of Brocks Gap are milky white and singly terminated; many have impressions of large, rhombohedral crystals on their surfaces. These rhombohedral forms are evidently crystals of dolomite overgrown by the quartz crystals. The largest crystal found at this locality measures 24 centimeters across and 40 centimeters long. This specimen has several areas covered by rhombohedral impressions (Figure 3). The next largest crystal measures 17 centimeters across and 29 centimeters long and tapers toward the termination. This specimen shows numerous cavities which may represent areas where the crystals grew around breccia fragments; which have

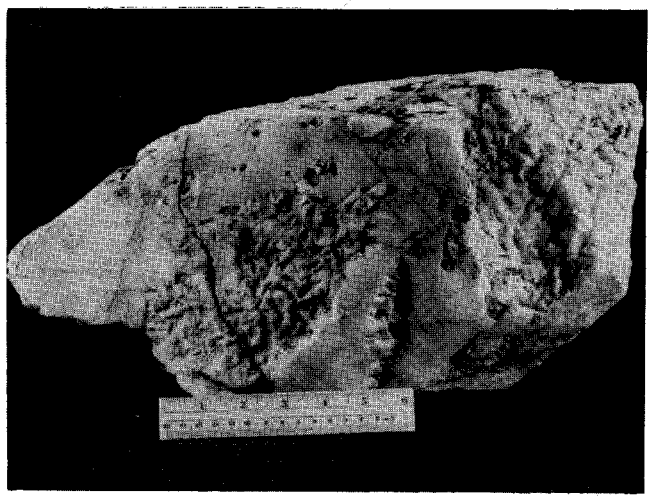

Figure 3. Largest quartz crystal found in study area.

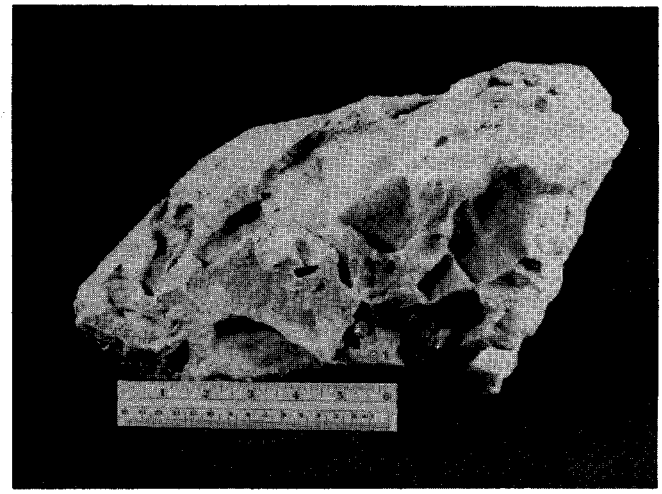

Figure 4. Vugs on side of crystal.

since weathered away (Figure 4). Rhombohedral impressions on this specimen are not as common nor distinct as those on the larger specimen.

One large quartz crystal is offset subparallel to its long axis (Figure 5). It measures in cross section 9 by 13 centimeters and is 22.5 centimeters long. The crystal, which is terminated, appears to have been sheared after it was fully developed. The fracture is filled with quartz.

A doubly-terminated milky quartz crystal was found approximately 0.85 miles southeast of the original discovery site and measures 8.5 centimeters in length, and 4.5 centimeters by 2.6 centimeters across. The crystal shows crude rhombic impressions on one side, suggesting that it grew in the same environment as did the larger crystals. As with all large crystals found in this area, this crystal was found as float material and may have been transported a considerable distance.

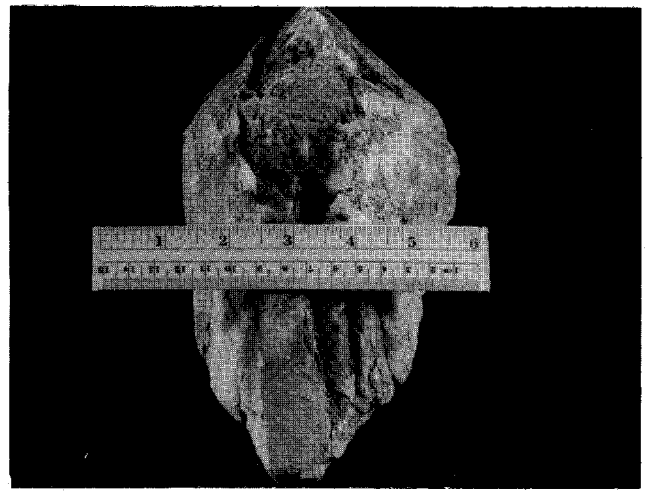

Figure 5. Quartz crystal offset along c-axis. View along c-axis.

There are several possible sources of silica for forming the quartz crystals. One possibility is chert beds and chert stringers locally abundant in the Beekmantown. Chert and massive quartz and quartz crystals are found together in rock dumps in the area, which may be evidence that these materials are from the same stratigraphic interval. The chert therefore represents a possible source of silica for the quartz crystals. Two thin beds of light brownish-yellow, extremely compact, quartz-rich siltstone in the Beekmantown Formation are another possible source of the silica for the quartz crystals.

Insoluble residue analyses of limestone samples taken from within the Beekmantown at the Brocks Gap area show varying amounts of silica in different stratigraphic intervals; this is another possible silica source for the quartz crystals.

The quartz may represent a primary deposit formed in association with lead and zinc ores of the area. Brent (1960) states that the common mineral association in the Timberville Mining District, which includes the area of Brocks Gap, is dolomite, quartz, pyrite, galena, and sphalerite. It is possible that the large quartz crystals from near Brocks Gap and the sulfide-bearing breccias of the area formed in a similar environment. The Brock Gap area would represent a zone deficient in zinc, lead, iron, and sulfur. Another possibility is that dolomite and quartz formed in the earlier stages of the paragenetic sequence, while pyrite, galena, and sphalerite form at later stages.

It is probable that the quartz developed after partial solution of the Beekmantown Formation. Rader (1967, p. 23) in reference to collapse breccia deposits found in carbonates in the Shenandoah Valley, states that a possible sequence of events leading to the development of the collapse breccia is (1) fault movement, (2) dissolution of adjacent carbonate rock with the resultant development of solution caverns followed by, (3) collapse of the supported cavern roof and finally, (4) cementation of the fragments and blocks by dolomite. Herbert and Young (1956, p. 1-3) state that collapse breccias in the Shenandoah Valley post-date a period of thrust faulting and that the breccias are related to the North Mountain fault. It is likely that the formation of the quartz is related to mineralization cementing breccias in the area.

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COAL MINE TOTALS

As of December 2nd, 1981, the Division of Mines and Quarries reported 801 active coal-mine permits in Virginia. There were 471 permits for truck mines. Buchanan County has the most permits at 312. The following table shows the permit statistics by mining type and county.

		TYPE OF MINE				
		Tipple	Auger	Strip	Truck	Total
COUNTY	Buchanan	20	17	40	235	312
	Dickenson	10	2	33	68	113
	Lee	1	9	30	41	81
	Russell	2	6	12	18	38
	Scott	0	0	0	1	1
	Pulaski	0	0	1	0	1
	Tazewell	3	1	3	36	43
	Wise	11	21	108	72	212
	Total	47	56	227	471	801

MINERAL RESOURCES

Marline Uranium Corporation, a wholly owned subsidiary of Marline Oil Corporation, announced on July 21, 1982, the discovery of a significant concentration of uranium mineralization in Pittsylvania County in southern Virginia. According to the announcement, a reserve report prepared by Pincock, Allen and Holt, an independent mining engineering firm, indicated higher grade geological reserves totalling approximately 30 million pounds of uranium oxide (U_3O_8) with an average grade in excess of four pounds per ton of ore. In addition, larger quantities of lower-grade geological reserves were also identified. Marline Uranium Corporation vacated their leases on property in Culpeper, Fauquier, Madison, and Orange counties in September of 1982. In early December, Union Carbide Corporation announced it had taken options on the Pittsylvania properties and would begin an 18 month evaluation.

Presently there is a State moratorium on uranium mining, which will expire on July 1, 1983. The uranium subcommittee of the Virginia Coal and Energy Commission is studying the issues and will receive recommendations from private consulting firms on December 15th and then is expected to make a recommendation on uranium mining and milling to the 1983 Virginia legislative session.

Luck Stone Corporation of Richmond, Virginia, has been issued an air pollution permit for a stone quarry in granitic rock just north of Standardsville in Greene County. A special use permit had been approved in March, 1982. The quarry has been limited to production of 800,000 tons of crushed rock per year.

In the fall of 1982, the Augusta County Board of Zoning Appeals issued a special use permit to James River Limestone Company of Buchanan, Virginia, to mine the kaolin dumps at the old Cold Springs mine. The mine, which closed in 1951, is in the Big Levels area of southeastern Augusta County. Mining of the material will probably be used for various filler and extender applications. Removal of the dumps followed by reclamation will eliminate an "eyesore" seen miles away from Interstate 81.

Interest continues in and along the Gold pyrite belt in the central Virginia Piedmont province. Companies continue to explore for base-metal sulfides as far southwest as Appomattox County and as far northeast as Culpeper County. In Orange County, Walnut Creek Mining Company's gold-mining venture has opened up a quartz vein near Rhoadesville along Walnut Run and also a commercial panning operation at Wilderness, about 10 miles to the northeast. Around the old Melville gold mine, Callahan Mining Corporation has proposed to drill several core holes below the workings from the 1930's.

Chevron Resources Company has essentially completed their exploration program for base-metal sulfides in Carroll, Floyd, and Patrick counties of southwest Virginia. More than 40 core holes were drilled, many in Carroll County; samples were not as promising as surface tests indicated.

P.C.S.

NEW COAL TERMINAL OPENED

Massey Coal Terminal Corporation began loading coal at its new terminal at Newport News in mid December. The new terminal is designed to handle twelve million tons of coal per year. Built at a cost of 122 million dollars, the terminal is scheduled for completion in April of 1983. Construction is continuing on a 135-million-dollar terminal next to the Massey facility by Dominion Terminal Associates. The Dominion pier is scheduled for completion in 1984.

Richmond Times Dispatch
17 Dec '82

SCHEDULED MEETINGS

March 16-18, Southeastern Section, Geological Society of America, Tallahassee, Florida. (James F. Tull, Dept. of Geology, Florida State University, Tallahassee, FL 32306).

May 13-20, Paleozoic stratigraphy and Appalachian Basin, field seminar, Arlington, Virginia (John Dennison, Dept. of Geology, University of North Carolina, Chapel Hill, N.C. 27514).

May 17-20, Virginia Academy of Science, George Mason University, Fairfax, Virginia (S. O. Bird, Division of Mineral Resources, P. O. Box 3667, Charlottesville, VA 22903).

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OIL AND GAS NEWS

Joseph Arnold

Because of surplus gas at present and the lack of a market, there has been intensified interest in finding oil in southwestern Virginia. At present there are two small oil fields in the State. These are the Rose Hill field and Ben Hur field named for the towns where they are located in Lee County.

Oil is primarily found in the Ordovician Trenton Formation and is extracted for the most part from fracture type reservoirs. The majority of wells drilled are shallow and relatively inexpensive. Depths usually range from 2500' to 3000'.

There has been increased use of air drilling in Virginia and Appalachian Basin as opposed to the conventional fluid drilling. Air drilling is faster and cheaper in hard formations resulting in more productivity and better rig utilization. Penetration rates can be three or four times over mud drilling and will use one-half to one-fourth the number of drill bits.

Shell Oil Company will drill in the Baltimore Canyon 100 miles off the Maryland-Delaware coast in over 6000' of water. There have been no commercial discoveries in the Outer Continental Shelf after 26 wells. Success could lead to more drilling in the South Atlantic region. Virginia has one tract under lease on the continental shelf about 70 miles east of the Eastern Shore Peninsula.

FIRST U. S. OCCURRENCE OF WODGINITE

Wodginite, a tin-rich tantalum oxide mineral, has been discovered in the Herbb No. 2 pegmatite in Powhatan County, Virginia, by Michael A. Wise of the University of Manitoba, Winnipeg, Canada. Wodginite is known to occur in various localities throughout the world, but this is the first reported occurrence of this mineral in the United States. Wodginite occurs as black anhedral masses up to two inches in length and is associated with manganocolumbite and cassiterite. The mineral, which was first described by Nickel and others in 1963, is an important ore mineral of tantalum.