THE BARYTES OF BRISTOL, VIRGINIA

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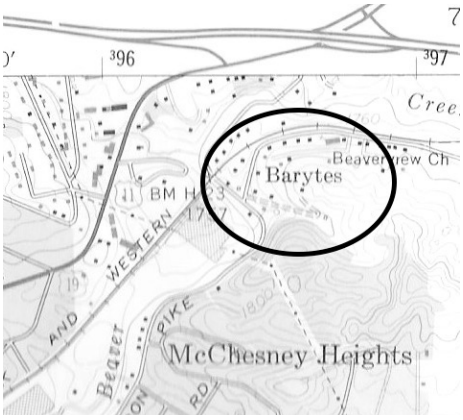
A good story is hard to come by anymore, and to find several true ones in one ball of yarn is a pleasure, indeed. Such is the case with the section in northeast Bristol, Va. called "The Barytes". But first of all, the mundane facts. Barytes (pronounced locally as 'bear tease', but officially as 'bare-**i**-tease'), is the name of barium sulfate or the ore from which metallic barium is extracted. People who have had either an upper GI x-ray series, or a barium enema know all about this heavy milky material when suspended in liquid. In the late nineteenth century pockets of the ore were being discovered in East Tennessee and Southwestern Virginia. At that time it had little use other than as an alternative to titanium dioxide as a coloring agent for white paint.



MAP OF THE SITE OF THE BARYTES PLANT SOUTH OF CURRENT EXIT #5 ON I-81

About 1900 the English press was getting all stirred up when they discovered that the Chicago meat packers were putting embalming fluid in the prepared meats, such as sausage and potted meats, that they sold to the English. In an era before refrigeration this was said to help preserve the meat on its long Atlantic voyage. The English got the ear of President Theodore Roosevelt, who got the Pure Food and Drug passed in 1906, which outlawed such practices.

Wheat flour millers of that era had a couple of problems. Unmilled wheat often partially spoiled before it could be ground and packaged. When it spoiled, it turned brown. This upset potential buyers, and cost the millers money. The solution was to put some kind of white powder in with the brown flour to hide the undesirable color. Several products were used, such as powdered limestone. Still, the color was not quite white enough. So, the next step was to heat limestone in a kiln and convert into quick lime, which was nice, white, and powdery. This was added to the poor quality flour, but as it was also used to make white wash and as a disinfectant, even the flour merchants had second thoughts. Nevertheless, quick lime had its advantages. Another problem the millers had was weevils. These insects lived off of both the unmilled grain as well as the packaged flour. Housewives became disturbed when their flour turned up with

numerous of the blackish / brown insects, or their larvae, in their flour bin. Therefore, flour was sifted before the flour was mixed for cooking. They always told their grandchildren that this process was to make the biscuits lighter, which no doubt it did, but everyone really knew what was happening, and why. The problem was, however, that the insects left excrement in the flour, which made the biscuits bitter. Clearly, something was needed to kill the weevils. Quick lime did so. Nevertheless, the quick lime changed the bitter taste of the weevils to a burning taste not unlike lye.

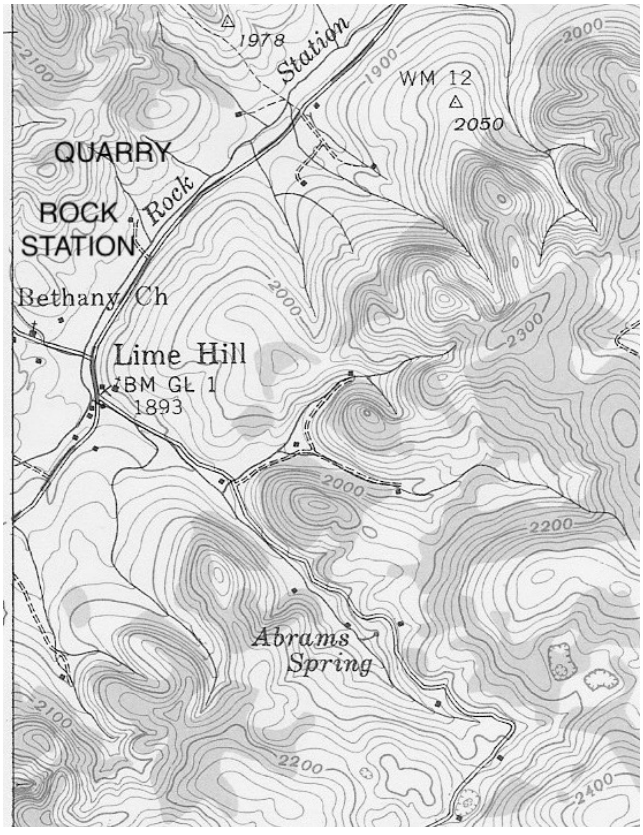
The answer to all this was powdered flour of barium. It was snow white, left no taste, and had the added benefit of killing the weevils. It also was very heavy. Since flour is sold by the pound, it increased the value of the packaged 'flour'. It was widely used nationally in this manner. The public accepted it for a while, and finally realized that they were being swindled. The government stopped this practice by 1927. It is still used in hot third world countries, such as in Africa.

The Bristol connection with barium begins with John T. Williams, Sr., a wealthy real estate investor and capitalist of New York and St. Louis. He was very rich. He owned a yacht, which was bought by J. P. Morgan. The family travelled back and forth between New York and St. Louis by their own private train. His son, Harvey, developed pulmonary tuberculosis. The standard treatment at the turn of the 20th century was fresh air. The family investigated the situation, and decided that Bristol, Virginia had a good climate, and also provided something for Harvey to do while he recuperated. Accordingly a corporation entitled John T. Williams and Sons was set up, and construction begun in 1902. The plant was opened in 1904, and Harvey and his wife built a house near the plant in Northeast Bristol just south of the current exit #5 on I-81 in 1906. It was named 'Amalthea', a word which is derived from ancient Greek mythology, and is said to mean an intelligent person who does a foolish thing. Harvey died Dec. 1906 with a sudden pulmonary hemorrhage, which was so massive that it shocked his physician, Dr. Rogers. John L. Williams, Jr. (Jack) was dispatched to assume management of the business. In Dec. 1911 this corporation was bought by Bristol Chemical Co. for $4,000,000, and which was owned by John. T. Williams, Sr., and which owned a "big plant" in Bristol which seems to have been a parallel venture, and which controlled most of the production of barytes in East Tennessee. Virginia produced most of the barytes in the nation at this point in time, and East Tennessee much of the rest. The announcement in the newspaper stated that plant expansions in Bristol were expected to employ a thousand people.

As far as several informed oral traditions tell us, the plant in Bristol produced only the chemical additives, which it sold to others. It did not sell the flour / barium / possible quick lime mix. Two different close associates to the Williams family have told the author the same story. A government investigator came to review the Bristol plant, and the Williams family became suddenly so upset on hearing the news that they got up from their supper table, left town, and did not come back. The time frame seems to comply with the above mentioned date of 1927 by which time the government had finished the process of stopping the sale and manufacture of flour that was adulterated with either barium or quick lime. This story was confirmed by the author's grandfather, who was company doctor at the corporate operation at Rock Station or

Lime Hill. Amalthea stood empty for many years, but was finally occupied and then torn down. In 1921 the plant, itself, was converted into a chicken hatchery.

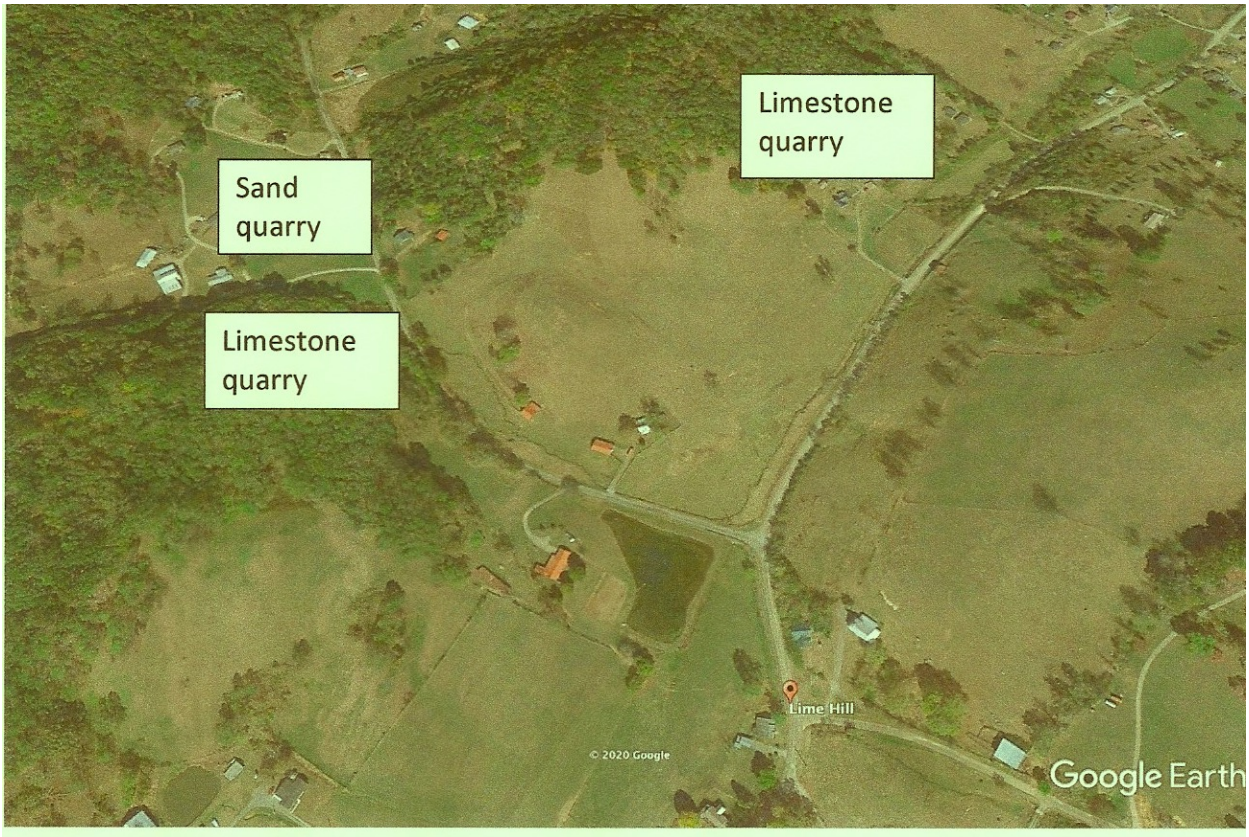
Concerning the Lime Hill operation, it is documented mostly by oral family tradition. The author's paternal grandfather, Dr. Joseph S. Fleenor, settled to practice medicine near what is now called Lime Hill, which is the intersection of the current Three Springs Road, the Livingston Creek Road, and the Rich Valley Road in Washington County, Virginia. In 1887, which is close to the time he settled there, this intersection was known as 'Tabor'. The South Atlantic and Ohio Railroad came through Benhams from Bristol a year or so before 1890. The date is unknown, but 'soon' thereafter an industrial complex was set up directly across the road, and which consisted of a lime stone quarry directly in front of his house in the line of hills that separate Rich Valley from Poor Valley. There was a grouping of 'company houses', and a commissary. There was a railroad spur that was built down from Benhams, which ended in a depot named Rock Station. This resulted in a name change for the creek that ran through the site, which had been 'The South Fork of Abram's Creek' named after Abraham Fulkerson, who lived at its head spring about a third of the way to Three Springs from Tabor. This name is documented on the original land grants. The name used on the current USGS topographic map is now Rock Station Creek. The author's maternal grandfather, George H. Tittsworth, Sr. used to be a trainman of the local freight that serviced Rock Station. Fanning out to the southwest, and across Livingston Creek Road to a site known today as Lonnie Murray Hollow (labelled on Google Maps as 'Joy Drive') was a network of narrow gauge tracks which went to a small lime stone quarry at the south side of the intersection, and a 'sand' quarry on the north side. It should be noted that barytes occurs in sand deposits.



SITE OF ROCK STATION,
LIME HILL, ABRAM'S SPRING, ROCK STATION CREEK

It is obvious from the small size of these quarries that they were but a part of the contributors of minerals to the Barytes plant in Bristol. One assumes that the Williams sites in contiguous Virginia and East Tennessee supplied the rest.

Dr. Joseph Fleenor was the company doctor for the Rock Station operation. He confirmed to his family (including the author's father) that the product of Rock Station was used as an adulterant in flour. All the other contributors to the oral tradition of the Barytes Plant given to the author confirm this. Some mention that it might have been used in paint, but they all invariably grin when they say it. There is nothing to say that some of the barium did not go to paint manufacture. It is also obvious from all the data, including dates, that this operation was closely related to the Pure Food and Drug Act. The entire period from the discovery of the regional barytes deposits to the end of the industry was only about 40 years.



SATILLITE VIEW OF THE ROCK STATION OPERATION SITE

The Barytes Bibliography

1 - https://dspace.ychistory.org/bitstream/handle/11030/69148/00000834.pdf?sequence=1

Barite (Barytes) (often occurs in association with silica or sand) was mined in places such as Tennessee and was converted to "rock flour" (mineral barium) and was used as an adulterant in wheat flour – the Pure Food and Drug Act of 1906 passed by Theodore Roosevelt provided legal basis for outlawing it by 1923

2 - https://books.google.com/books?hl=en&lr=&id=bs50V9090p4C&oi=fnd&pg=PA1&dq=barytes+flour+adulteration&ots=irj-eHMI12&sig=VIC79j9QHNrg363pYxuIgPed_y4#v=onepage&q&f=false

By John Mitchell, M.C.S. 1848 – describes calcium carbonate as a flour adulterant

3 - https://books.google.com/books?hl=en&lr=&id=BD4nAQAAMAAJ&oi=fnd&pg=PA2&dq=barytes+flour+adulteration&ots=xmLCROhM8t&sig=2LfMm7DKGwPeSo1j13fbLbQhnoc#v=onepage&q&f=false

Food Products and Their Adulteration by E. F. Ladd 1902 – describes flour adulteration "to make it go further"

4 - https://search.proquest.com/openview/48ade21e75d5b30cd6bc6bc96e8c8305/1?pq-origsite=gscholar&cbl=24144

By M. J. B. J. Bailey – flour adulterated with barytes

5 - https://scholar.google.com/scholar?hl=en&as_sdt=0%2C47&as_vis=1&q=barytes+Bristol+Va.&btnG=

"Evidence on the Age of barite, Zink, and Iron Mineralization in the Lower Paleozoic Rocks of East Tennessee" by R. H. Carpenter and J. M. Fagan. – designates site as being "near Bristol"

6 - https://pubs.acs.org/doi/pdf/10.1021/ie50095a020

"Development of Chemical Industires Along the Norfolk and Western Railroad: Natural Resources developed and Undeveloped". By E. A. Schubert – 1917 – "At one time Virginia produced a very large percentage of barytes required by (industry)

7 – location Rock Station – 36 39' 17.81"N; 82 14' 49.14"W

8 - https://academic.oup.com/jee/article-abstract/29/3/498/2201499?redirectedFrom=PDF

'"Dust Treatments for Protecting Beans From The Bean Weevil" by Howard O. Deay & John M. Amos published in "Journal of Ecomology" vol. 29, issue 3, June 1, 1936 pgs 498-501

In 1933 hydrated lime and barium were used to prevent weevil infestation in wheat and other grains

9 - https://www.researchgate.net/publication/317325096_Efficacy_of_rice_husk_ash_against_rice_weevil_and_lesser_grain_borer_on_stored_wheat

"Efficacy of Rice Husk Ash" Against Rice Weevil and lesser grain Borer on Stored Wheat" by Grace O. Otitodun et al published in the "African Crop Science Journal" of June 2017

Barium is one of the products that was shown to be effective

10 - USGS topo 1897 Bristol / Raven's Nest quad – no RR spur between Benham's and Rock Station; Lime Hill named 'Tabor'

11 – USGS TOPO 1938 Wallace quad – no RR spur to Rock Station

12 – "Bristol Herald Courier" – 1-27-1952 documents opening date of plant

13 – "Bristol Herald Courier" – 1-19-21 documents plant had closed by 1921 & was turned into a chicken hatchery

14 - https://www.newspapers.com/clip/7156842/bristol-chemical-to-take-over-john-t/
"The Tennessean" 12-24-1911
Gives date of founding of Barytes, and its owners, and its sale

14 – contributors to the data used in this article: Joe F. Smith, Sr., Wilma Smith, Allen Snodgrass, Lawrence Fleenor, Sr., George H. Tittsworth, Sr., Walter Arnold recalling his father' memories, Jerry Sharrett, Edgar A. Howard, a Mr. Harry ? who chose to leave his surname anonymous

15 - https://www.nature.com/articles/d41586-018-07038-0

Formalin as an additive to meat products

16 – https://books.google.com/books?id=Ewjz2cT9KoEC&pg=PP583&lpg=PP583&dq=British+object+of+formalin+in+meat&source=bl&ots=Rv8sK2pAvl&sig=ACfU3U3tpjlgE1BnQMeBNGDLZyHUJgc1dg&hl=en&sa=X&ved=2ahUKEwigzv7sgPHqAhXumOAKHd4KCjM4KBDoATACegQIBRAB#v=onepage&q=British%20object%20of%20formalin%20in%20meat&f=false

the early British investigations and litigation over the addition of formalin to various foods, such as meats

The Encyclopaedia Americana edition 1904 vol. #7, pages are not numbered