

An 1898 rendering of East Walpole, Mass., showing to the left of the railroad trestle the American Glue Company and to the right the Hollingsworth and Vose paper company. The print is from a typical Victorian graphic, "A Bird's Eye View of East Walpole," one of many produced throughout New England.

The American Glue Company: A Gritty Problem

by Karl West and Betty Cottrell

Our gritty problem began with a call from J. Roger Mitchell, the Curator of Minerals, Delaware County Institute of Science in Media, Penn. This call from a stranger started a lengthy investigation. His question was simple — "Did we have any information about the American Glue Company of East Walpole, Mass.?" — but we didn't know what he was talking about. The company was supposed to have been in operation around 1900, yet the written histories of Walpole did not mention it, nor were our town's "historians" or any older townspeople aware of it.

I called Mr. Mitchell back and suggested he might want to check Walpole, New Hampshire or Walpole, Maine, but he was certain. In Delaware County, Penn., there was a garnet mine that had been owned by the

American Glue Company of East Walpole, Mass. The mine contained a poor quality garnet that was crushed to make sandpaper.

Knowing that such a company did exist, we contacted the Massachusetts Secretary of State's Department of Corporations and Taxation and discovered that there was an American Glue Company organized 13 January 1906 in Boston. Later, in 1930, its name was changed to Eastern Equities Corporation, and on 19 December

The authors are indebted to J. Roger Mitchell, Curator of Minerals, Delaware County Institute of Science, Pennsylvania, who brought this problem to their attention and provided additional information on garnet mining in Delaware County, Pennsylvania.

1945 the corporation was dissolved at the Supreme Judicial Court in Boston.¹

The next stop in our search was the Norfolk County Registry of Deeds, in Dedham, Mass., where we found that the Hollingsworth and Vose Co., a paper manufacturer, had sold land adjacent to its plant in East Walpole to the Union Sand Paper and Emery Wheel Company, a company incorporated in the State of Maine in 1892.² Later, Hollingsworth and Vose sold land and a building to the Union Sand Paper Company³ (incorporated in 1899), and on this deed reference is made to the earlier deed by Zachary T. Hollingsworth and Charles Vose of Hollingsworth and Vose. (Unfortunately, however, we overlooked this bit of information at the time and had to "discover" it again later in our research.) This parcel was adjacent to the land already owned by Union Sand Paper, which then sold its land and buildings to the American Glue Company, a firm incorporated in New Jersey, in 1901.⁴ In 1906 the American Glue Company of New Jersey sold the land and buildings to American Glue Company incorporated in Massachusetts.⁵ Also in 1906 Hollingsworth and Vose sold additional adjacent land to American Glue Company.⁶ In 1918 the American Glue Company bought Bagley's land on Washington Street, East Walpole, next to the 1906 purchase and extending into Norwood to Water Street. By the late 1930s business must have slowed because the Town of Walpole took the American Glue property for nonpayment of taxes, but records at the time indicate that the taxes were owed by the Union Sand Paper Company, not the American Glue Company.⁷ At around the same time the Carborundum Company bought the glue business and moved it to Niagara Falls, N.Y. As a good business Carborundum paid the back taxes, and the American Glue Company was dissolved.⁸

Now we knew that the American Glue Company did exist. While researching the information about the company we continued to search for the sources for the other materials that made up the product. We knew that garnet came from Pennsylvania. In 1873 a Middletown Township (Pennsylvania) geologist and mineralogist,

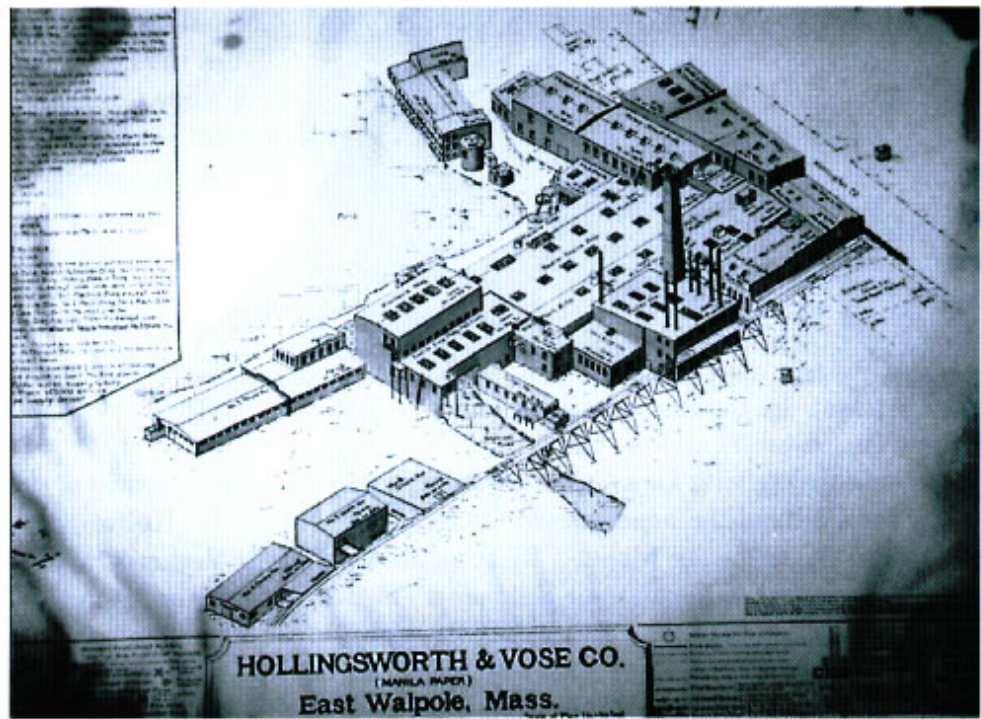


Figure 2. An 1890 Hollingsworth & Vose drawing of the facility in East Walpole. Courtesy of Hollingsworth & Vose.

John H. Smedley, found garnet sand in the spring ditch on a farm (now part of Delaware County) owned by Charles Williams on Faulk Road, near Booth's Corner in Bethel Township.⁹ The area, known today as Garnet Valley, in Delaware County takes its name from the vein of garnet sand that extends from Pyle Road, through Naaman's Creek Road and Route 202 to Smith's Bridge Road; west on Smith's Bridge Road to the Brandywine Creek; east on Smith's Bridge Road to the site of Concord School on Bethel Road; then through the Nelson Clayton property; across Garnet Mine Road under Foulk Road into Bethel Township. After discovering the vein, Mr. Smedley contacted several manufacturers of sand or grinding paper, but it was not until 1879 that the Herman Behr Company of New York purchased the 47 acres from Charles Williams at \$100 an acre. The Herman Behr Company started operating what was known as the "old mine." This "old mine" was an open pit about 200 feet in diameter and 85 feet deep.¹⁰

Garnet sand was hauled out of the mine by horses, and after processing, it was bagged and hauled by horse and wagon to the Chester Heights or Boothwyn Station. It was then shipped by railroad to Troy, N.Y., where it was made into sandpaper.

The mines were worked only nine months out of the year, because the water for the steam-operated pumps would freeze in the lines during extremely cold weather. The pumps were used to keep the mines dry during digging operations.



Figure 3. The Walpole Emery Mills in South Walpole. Could this have been the source of emery for the American Glue Company?

On Thanksgiving Day, about 1900, there was a heavy snowfall and the miners could not get back to work until the following Monday. By then, all of the steam lines were frozen and some had burst. This was the end of the digging operations in the "old mines."

As it happens, there had been two garnet mines operating in Delaware County. During the early 1890s, the American Glue Company opened a mine across the road from the "old mines." This new mine on the Fulton Farm also was an open pit mine, about 100 feet in diameter and 60 feet deep. However, about 25 feet from the open mine, the miners dug a shaft some 40 feet deep to a vein of garnet sand. From the shaft, the miners dug tunnels into the vein of garnet and followed it in two different directions until they came out into the open pit. Then a tunnel was dug under the road until it came to the adjoining property line. Another tunnel was dug below the first one, making a double passageway toward the Fulton property. The last tunnel was started about 1906, the year the mines closed.

It took about 15 men to operate the mines from the time the garnet sand was dug until it was ready for shipping. Small prospecting picks were used to find the vein of garnet. Large picks and shovels were then used to dig and load the garnet sand into large wooden buckets, which were moved out of the tunnel on handcars.

When it was brought to the surface, the garnet sand was weighed before it was processed. After going through the beaters and agitators, the garnet sand was crushed under a five-ton roller, washed and put into the drying room. After drying, the garnet sand was put into bags, with each bag weighing 165 pounds. This was one cubic foot of garnet sand. The market price at the turn of the century varied from \$30 to \$100 a ton. Garnet sand from the new mines was hauled to Chester Heights Station for shipment by rail to East Walpole.¹¹ Evidently this garnet was of excellent quality and the garnet paper made by the American Glue Company was in much demand by furniture finishers. Emery could have come

from the Walpole Emery Mills in South Walpole, (Figure 3). The company was first established as Alden Emery Company in 1876, becoming Walpole Emery Mill in 1877.¹² It must have been a very lucrative business, because the company produced salesmen's sample kits printed in gold with about 12 vials of various degrees of coarseness of emery.

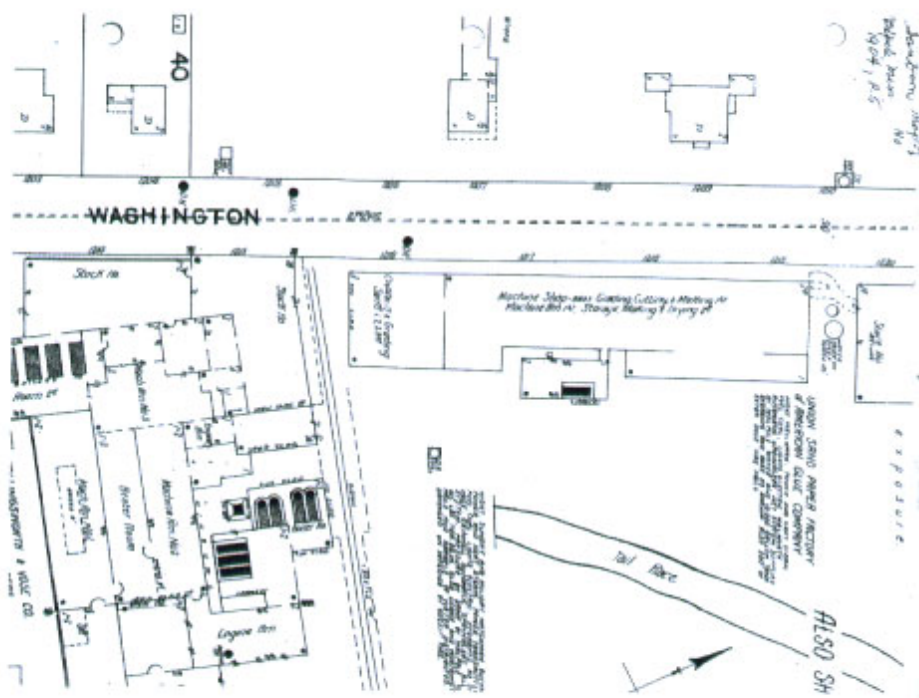
We assumed that the paper was purchased from next door at Hollingsworth and Vose, and the sand could have come from local stone. Two informants told us there was a sand mill on the property. Is this what they meant by a sand mill? Was it a machine to crush rock to sand or quartz, as opposed to a sifting mill?

Hollingsworth and Vose is descended from Tileston & Hollingsworth Co. in Mattapan, Mass., probably one of the first manufacturers of paper in the country. The company began in 1728 as McLean and Hollingsworth on the Neponset River. One of the Hollingsworths moved upstream to Walpole, and in 1871 Zachary T. Hollingsworth bought the early privilege of F.W. Bird, (known for Bird Roofing), a 12-foot water fall, on the Neponset River to make paper. In about 1880 Charles Vose joined him, and in 1892 the firm of Hollingsworth and Vose was incorporated.¹³

But where did the glue come from? A tannery that was in existence in Norwood, Mass., seemed worthy of investigation, but it turned out that it obtained hides in bundles, so would not have had access to other parts of animals. There were slaughter houses in the area, but we had no information about the residue from their animals. Later we learned that it was a good possibility that fish glue was used instead of animal glue.

To learn more about the manufacture of sandpaper we searched *The Chronicle*. There were two informative articles.¹⁴ It was while reading those two articles that we learned that sandpaper was being advertised as early as 1764. Examining the *Boston Gazette* of 10 September 1764, an advertisement by Daniel Parker of Union Street, Boston, had imported, among other things, sand over sand and emery paper. A good explanation of how sandpaper was made is found in *The Chemical Formulary*.

The first treatment consists of sizing the paper with a 10% glue solution. Paper is festooned until dried. The upper surface is then coated with a 35-40% glue solution, upon which the abrasive grain is sprinkled. The whole is dried again. The third treatment consists of applying a 10% solution of the same glue to bind the grain firmly together and to the paper. Again grains are sifted over the surface, and then the paper passes into a drying chamber.¹⁵



Figures 4 to 7. (clockwise from above). A 1904 insurance map of the American Glue Company. A cauldron (at right, below) at Hollingsworth and Vose where used hemp from ships' ropes was chopped, tossed into a caustic vat to remove tar, and recycled into paper. A tour of the old Hollingsworth and Vose plant revealed holes for beams in the foundation and (below, top) a staircase from Washington Street to a lower level.



However, in the earlier days the rolls of paper sent over to American Glue by Hollingsworth and Vose were unrolled, "painted" with a glue, sprinkled with abrasive from a box and spread out on a rack to dry.¹⁶ Later the roll would be cut into desirable-size pieces and packed for shipment. In those days the amount of glue, the consistency of the glue, and the amount of abrasive was rather loosely defined. A later worker at American Glue Company, Donald Kelso, wrote in a book *Early Days*:

Bert Grimes, the master coater at American Glue Company, had his glue mixture formula in a little black notebook, which he carried in the upper left hand pocket of his vest. His procedure was to instruct the crew to put into the glue vat so many bags of glue and so many pails of water. When this was reduced to the proper liquidity, he would examine the results by testing its adhesive properties between his thumb and

forefinger and order an addition of so much more glue or water or both. He was very clever in these moves so that he left no consistent pattern to be learned by his assistants.¹⁷

The Dictionary of Paper describes the various types of abrasive paper from emery paper, to finishing paper, to flint paper, to garnet paper. These various papers used different adhesives from animal glue, to fish glue to a varnish resin. The paper from which the sandpaper is made varies in weight from 40 pounds to 90 pounds for 24-inch by 36-inch reams of paper, depending upon its use.¹⁸

Of course these are not the only materials that have been used for smoothing. In prehistoric times it is

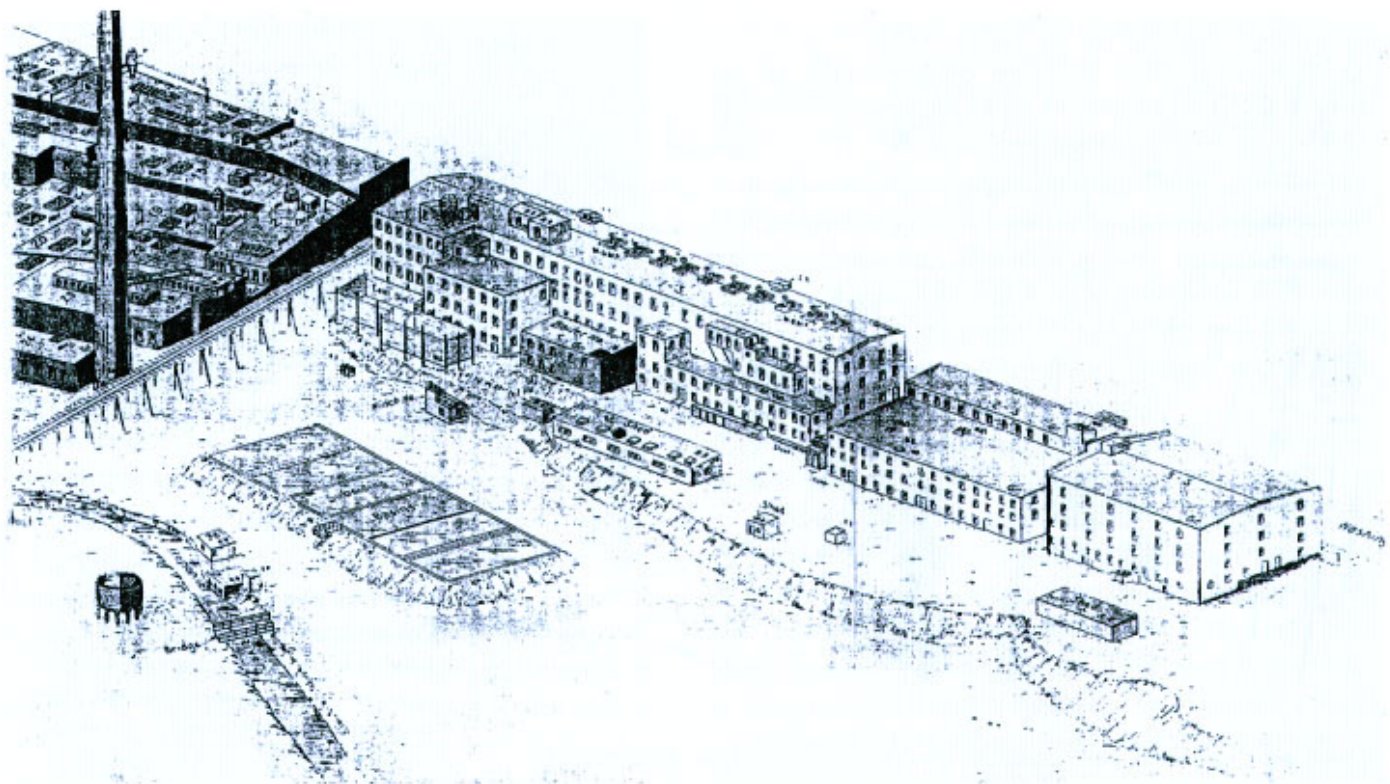


Figure 8. The 1939 insurance map of Hollingsworth & Vose. Why did Hollingsworth and Vose spend so much effort on drawing the American Glue Company?

known that rocks were rubbed over a surface to smooth it. In more recent times shark skin has been used to smooth a surface and was often desired because of the fact it could be wet for flexibility. An entirely different type of smoother is horsetail rush (*equisetum*). Its tall stems are rough and are rich in silica. They have been used by Indians and pioneers to scour pots and used in knife boxes to scour utensils.¹⁹

With the background we now had on the American Glue Company, we started to search locally again and did find, after eight people were contacted, that Ken Pierce of East Walpole recalled that when he was a young boy, his father was employed at American Glue. His father, however, did not go to New York when the company was sold to Carborundum. Another East Walpole resident, Hubert White, now in his nineties, remembered that his uncle, Howard Kuld, was a salesman for the company and he did move to New York and became an executive salesman for them.

Malcolm White, a retired executive of Hollingsworth and Vose, recalled the American Glue Company. He said they had two large, three-story buildings made of wood and painted red. In the 1940s the town condemned the buildings, and in the 1950s Hollingsworth and Vose tore them down. When asked if Hollingsworth and Vose supplied the paper, White said, "Oh, yes, Hollingsworth and Vose was a specialty

paper manufacturer, making small batches at a time of different papers. Once the paper was made it was transferred to American Glue over a dummy railroad between the two plants."²⁰

Examining an artist's view of East Walpole done in 1898, the American Glue Company is clearly shown beside the Hollingsworth and Vose plant on Washington Street (Figure 1). The sketch even shows a railroad siding between the two companies, next to the smoke stack.

We next made contact with Mr. David Daubney, the Project Engineer for Hollingsworth and Vose, who was a great help. In the company's files he found fire insurance maps of Hollingsworth and Vose from 24 April 1890 and 12 June 1906 (Figure 2). The 1890 map did not show buildings at the American Glue site, but the 1906 map clearly outlined and labeled the American Glue buildings.

Dave took us out into the yard where a retaining wall for the street had been one side of the foundation. Holes for the beams were still evident in the wall (Figure 3), and a staircase from Washington Street to a lower level still exists (Figure 4). Although two people recalled a sand mill out back, it could not be located on the drawings or its site found. We assumed then that it was used to sift out sand to varying degrees of coarseness.²¹

A few weeks later, Dave mailed us a 1939 three-

Union Sand Paper & Emery Wheel Co.

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307 Church St., Philadelphia, Pa.

Figures 9-12 (counterclockwise from top left). Pages from the Boston Directories of 1893 and 1900 help solve some of the mysteries surrounding the American Glue Company. Union Sand Paper & Emery Wheel Co. (later Union Sand Paper) had as one of its officers, Charles Vose, partner in Hollingsworth and Vose (Figure 9). In 1893, the D. Webster King Glue Co. was advertised as the sole agent for Dodd's Liquid Fish Glue (Figure 10); by 1900 American Glue Company had that honor (Figure 11). Was that where the company got their glue to make the sandpaper? Both Hollingsworth and Vose are listed as officers of Union Sand Paper in 1900 (Figure 12).

dimensional insurance drawing of Hollingsworth and Vose prepared by the Factory Mutual Fire Insurance Co. It not only showed Hollingsworth and Vose, but American Glue Company as well. This drawing shows the size of the building, its location next to the railway trestle, and details of roof construction. Why would so much money be spent drawing that company unless Factory Mutual insured both of them? Yet the drawing was titled Hollingsworth and Vose only (Figure 8).²²

Not satisfied, we contacted the Bureau of Corporations at the Secretary of State's Office in Augusta, Maine. We learned that originally Union Sand Paper and Emery Wheel Company was formed 15 December 1892. It later changed its name to Union Sand Paper Company, and the corporation was dissolved on 15 July 1903.²³ This was surprising because in the 1908 Town Report of Walpole, Mass., the fire chief comments on lack of adequate water "in case of a fire to the Union Sand or at the Hollingsworth and Vose Mills."²⁴ Later, when the town took the buildings and land for nonpayment of taxes in 1938, it took the buildings and land of the Union Sand Paper Company, now Carborundum Company. If it had dissolved in 1903, why was it still on the tax rolls?

While searching out the types of paper and methods of manufacture at the Boston Public Library, it was hoped some patents might turn up for the Union Sand Paper or American Glue Company. No patents were found, but while there, the Boston City Directories were examined. What a discovery!

In the 1893 Directory the Union Sand Paper and Emery Wheel Company advertised (Figure 9) listing garnet, flint and emery paper, and cloth.²⁵ The big surprise was that the president of Union Sand Paper and Emery Wheel Company was Charles Brandt, and its treasurer was Charles Vose. This Vose was the same man who incorporated Hollingsworth and Vose with Zachary Hollingsworth in 1882. In the same directory was a listing for the D. Webster King Glue Co., which was around before 1850, and sold Dodd's Liquid Fish Glue (Figure 10).

While reviewing the 1900 Directory, we found an advertisement for the American Glue Company (Figure 11) with stores in Boston, New York, Chicago, St. Louis and Philadelphia.²⁶ The advertisement indicates that by this time American Glue had taken over the

sale of Dodd's Liquid Fish Glue. In the same directory, the Union Sand Paper Company is advertised as making flint and emery paper, garnet and emery cloth and hat pouncing paper. In this advertisement, Charles Vose is listed as the president and Zachary Hollingsworth as treasurer — the same two who had incorporated Hollingsworth and Vose when the sandpaper company was being formed in Maine, but who built next door to their paper plant in East Walpole, Mass. (Figure 12).

Thanks to Roger Mitchell, we learned a bit more of the history of Walpole, Mass. It appears that in the same year Hollingsworth and Vose was incorporated in Massachusetts, the two partners formed a new company, the Union Sand Paper and Emery Wheel Company in Maine. Soon the Union Sand Paper and Emery Wheel company from Maine was sold to the American Glue Company of New Jersey, even though the garnet was being shipped to Walpole. Then the American Glue Company of New Jersey became the American Glue Company of Massachusetts. The very same year, Hollingsworth and Vose sold additional land adjacent to the Hollingsworth and Vose plant to American Glue. Coincidence? Was this an attempt to avoid taxes, or was there a problem of being a conglomerate? We don't

know. We do know that none of the histories of Walpole or Norfolk County mention the American Glue Company, so we have to assume everyone just considered American Glue a part of Hollingsworth and Vose.

Hollingsworth and Vose certainly contributed to the economy of Walpole by purchasing supplies and equipment from a large number of local companies. Also, for about 40 years it employed many local people, thus, along with to the Bird Company and the Kendall Company, adding to Walpole's reputation as "the second largest industrial town in Massachusetts."

Although the purchase of the American Glue Company by the Carborundum Company took place during the Great Depression, it didn't spell doom for most of the workers. The Abrasive Products Company was in the process of building a new plant in South Braintree, Mass. And those with experience went to work there, only a short distance from Walpole, diminishing the effect of the closing on the people of Walpole.

It has been a great journey and a good project to work on during the cold winter months. We have learned that such a company existed and have now kept alive its history, product and owners.

Authors

Karl West and Betty Cottrell are past directors of the Walpole Historical Society in Walpole. Recently, they edited *Once Told Tales of Walpole*, a book published in 1998 by the Walpole Historical Society during the Society's Centennial Year. They were also contributing authors to the book. EAIA members know Karl West from his various articles in *The Chronicle* since 1988.

Notes

- Massachusetts Secretary of State, Department of Corporations and Taxation.
- State of Maine, Bureau of Corporations, Augusta, Maine. Vol. 689, pages 6 and 7.
- Incorporated in 1892. State of Maine Vol. 841, pages 552 and 553.
- New Jersey Records, Vol. 913, page 333.
- New Jersey Registry of Deeds, Vol. 1019, pp. 109 and 110.
- Norfolk County Registry of Deeds, Vol. 1045, page 223.
- Ibid.*, Vol. 2211, page 36.
- The Carborundum Company was sold to Standard Oil of Ohio in the 1960s, which in turn was sold to British Petroleum in the 1970s. Carborundum was sold again and is now owned by a French company. During those transactions, all old historic records were destroyed.
- This information on the history of the garnet mines was researched by J. Roger Mitchell.
- The Herman Behr Company had started as a family business as early as 1872, by Herman Behr and other family members. That company was later sold to the Norton Company, a competitor of the Carborundum Company. Each Behr and American Glue found their garnet in Bethel Township, and both closed and eventually were absorbed by a larger companies who were also competitors. Charles Cheape, *Norton Company, A New England Enterprise* (Cambridge, Mass.: Harvard University Press, 1985).
- J. Roger Mitchell.
- Willard DeLue, *The Story of Walpole*, (Norwood, Mass.: Ambrose Press, 1925).
- The Story of Walpole*.
- L.L. Thwing, "Files and Sandpaper," (*The Chronicle*, Vol. 1, No. 13, page 6, 1935) and Loring McMillan, "Sandpaper," (*The Chronicle*, Vol. 8, pp. 17 and 18, 1955).
- H. Bennett, Editor-in-Chief, *The Chemical Formulary*, (New York, N.Y.: Chemical Rubber Co., 1933).
- Donald Kelso, *Early Days*, cited in Cheape, *op cit*.
- Kelso, *op cit*.
- Michael Kouris, Editor, *Dictionary of Paper*, (Atlanta: Tappi Press, Atlanta 1996).
- Because when this company started, it was known as the Union Sand Paper and Emery Wheel Company, it might be well to include an unusual reference to early grindstones. Because of the nature of some stone, grindstones were actually cut out of the layers of stone in the ground for primitive use as grinding wheels. Karl H. West, Jr. "The Grindstone Quarry," *The Chronicle*, Vol. 49, No. 1, p. 18.
- Interview with Malcolm White.
- On our walk over to the glue site we passed through one of the older parts of Hollingsworth and Vose. Along one side was a large cauldron about eight feet in diameter (Figure 5). Hemp was used in good quality paper, and the company found a cheap source for hemp in Boston in the worn, discarded ropes from sailing vessels. Hollingsworth and Vose bought them very inexpensively, chopped them into small pieces, put them into a caustic vat to remove the tar, and obtained the desired cheap hemp.
- Insurance maps (Figures 2, 4, and 8) were valuable to our research. Figure 2 is owned by Hollingsworth & Vose. It was furnished to them by the Factory Mutual Fire insurance Company of Norwood, Mass. Factory Mutual insured Hollingsworth & Vose and used the drawing made by the Sanborn Map Company of 11 Broadway, New York. The Sanborn Map Company was known throughout the area for its detailed insurance maps. There are at least three sets of Sanborn maps for Walpole, 1904, 1908 and 1918. The 1904 set (Figure 4) consists of five pages, each about 24" by 18" The map includes most of the structures in the main parts of the town with the buildings drawn to scale and with a symbol to indicate the height of each. The original has different colors to indicate the type of construction, and often the roof type is labeled. These maps were used by the town for tax assessment and in the event of catastrophe involving any building. Fire insurance companies, such as Factory Mutual, used them extensively.
- State of Maine Bureau of Corporations, Elections and Commissions.
- Annual Town Report, Walpole, Mass., 1908.
- City Directory*, Boston, 1893.
- City Directory*, Boston, 1900.



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THE PURPOSE of the Association is to encourage the study of and better understanding of early American industries in the home, in the shop, on the farm, and on the sea; also to discover, identify, classify, preserve and exhibit obsolete tools, implements and mechanical devices which were used in early America.

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Front: The schooner yacht *Coronet* at sea in the late-19th century. The photo is from the album of John D. Wing, who owned the yacht from 1891 to 1893. It is reproduced here by the kind permission of Elizabeth Wing Byram.

Back: The Warren Axe & Tool Company, Warren, Penn., in 1934. The men are sanding, shaping, and polishing axes on high speed stone wheels. Thank you to Allan Klenman for passing along this photograph. He had received it from a former official of Warren Axe.

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