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Money as Industrial Waste

The Business of Recycling Greenbacks at the Bureau of Engraving and Printing

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Historical Resource Center, BEP

(Top) Macerator in the Treasury building, 1910.
(Bottom) Macerating room in the Treasury building, 1895.

From its early days, the Bureau of Engraving and Printing (BEP) was conscious of the environmental impact and waste resulting from its operations, especially when it came to dealing with scrap currency paper and notes redeemed by the Treasury. As a result, the BEP continually tried to minimize waste by reducing scrap, reusing old notes and recycling paper by turning it into pulp. However, in the many years before the first Earth Day, the BEP's efforts were not so much seen as working to save the planet as they were working to save money and to be a good neighbor in Washington, DC.

When the BEP first began operations in the Treasury building in the 1860s, the Treasury was in charge of dealing with currency paper waste disposal. It did so by burning mutilated and imperfect bills along with scrap paper and redeemed currency. This was done in a small outbuilding near the present-day Ellipse that housed an incinerator. During burning, the smoke was forced through a water filter to prevent any partially burned notes from going up and out of the chimney.[1] Despite this precaution, it was not unusual for charred pieces of notes to drift over the surrounding neighborhood in a haze of thick smoke.[2] After the burning operation, the ashes, described as metallic in nature, were removed from the furnace and piled around the building.[3] Fortune hunters would search these piles for note fragments that they would piece together and attempt to redeem from the Treasury.

Not surprisingly, the Treasury and the BEP found this method of dealing with waste paper less than satisfactory. However, they were bound by law to destroy any security paper by burning. It was not until June 1874 that Congress passed a law allowing the Treasury to use other means to take care of the problem, specifically the maceration of paper into a pulp. Later that year, a macerator was installed in the basement of the Treasury building.

One account described the macerator as being 12 feet in diameter and fitted with over 100 stationary and rotating knives.[4] Later macerators were said to consist of one or two cylinders, each measuring six feet tall and four feet in diameter and installed beneath the floor of the macerating room.[5] In either case, the macerating process was the same. The money was dumped in through a hatch atop the macerator, which was about half full of a mixture of water, soda ash and lime.

Library of Congress

BEP macerating room, 1912.

These chemicals were designed to destroy the fibers in the paper and break down the colors in the ink. Once activated, the knives in the macerator would cut and shred the paper into small pieces.[6] The machine would be run for several hours, but only overnight because the vibrations from the machine shook the building.[7] The output was a liquid, grayish pulp. On average, the macerator produced 17,500 pounds of pulp a day.[8]

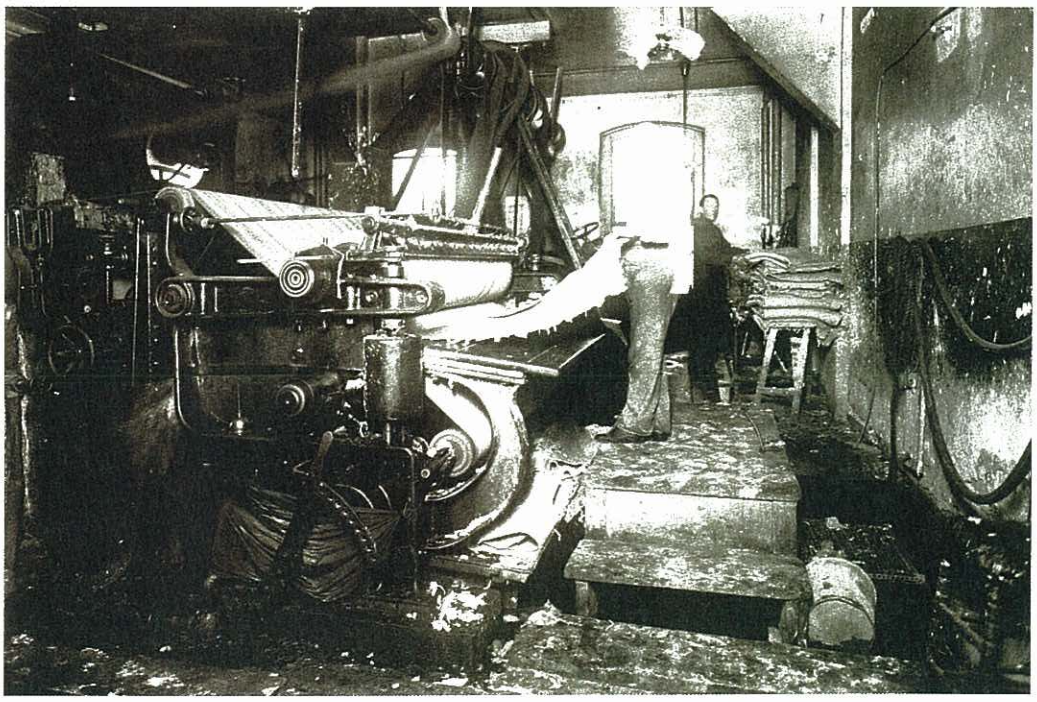
The BEP did not have its own macerator until it moved from the Treasury building in 1880 to its new home at the corner of 14th Street and Independence Avenue. At that point, both the BEP and the Treasury were operating macerators. The BEP handled scrap from production while the Treasury destroyed redeemed currency. It is unknown what was first done with the resulting pulp from both macerators; but, by 1886, the BEP was drying and processing the pulp into bales or "blankets" of pulp, which were then sold.[9] Records for that year report that the BEP produced 100,000 pounds of dried pulp, selling 94,395 pounds of it.[10]

Dried pulp was sold to private companies that used it in various ways. Much of it was used by paper companies for such items as bookbinder's board and other applications where the color and texture of the paper were unimportant. The pulp was also used to make money pulp souvenirs such as postcards, plaques and "paper maché" novelties such as the Washington Monument, the Capitol building, George Washington, Abraham Lincoln, shoes, hats, animals and paperweights.[11]

In the 1880s and 1890s, sales of dry pulp by the BEP gradually increased, reaching 207,131 pounds of pulp in 1900, more than double that sold in 1886. In 1904, the macerator in the Treasury was dedicated to the destruction of only national bank notes and the one in the BEP began to be used for everything else. This move was made largely because the BEP was now bleaching its pulp, removing any last trace of the destroyed notes.[12] One result of the increased use of its macerator was that the BEP started producing and selling an additional 100,000 pounds of pulp every year. In 1907, the BEP sold 448,000 pounds of dry pulp.

While the sale of pulp brought some money into the BEP ($9,967.99 in 1907), it made better economic and environmental sense to reduce the amount of paper going into the macerators. More money would be saved if fewer notes were produced, resulting in less scrap. This seemed impossible in the late 1800s and early 1900s. Part of the problem was that the Treasury did not reissue currency at this time. Any notes returned to the Treasury had to be destroyed and replaced with new notes. This fact, combined with a turn-of-the-century craze among shopkeepers and the public for "new" money, led to excessive production and consequent waste.[13]

Studies of the time revealed that at least 30% of the notes returned by banks throughout the country were not actually worn but simply soiled, and only needed cleaning to be reused.[14] In response, the BEP undertook an investigation in 1909 of the feasibility of cleaning soiled currency for possible reissue as new notes. It developed various prototype machines to wash, size and iron notes. However, to make the cleaning of notes practical, an all-in-one machine needed to be developed. When commercial companies proved reluctant to do this, BEP engineers developed their



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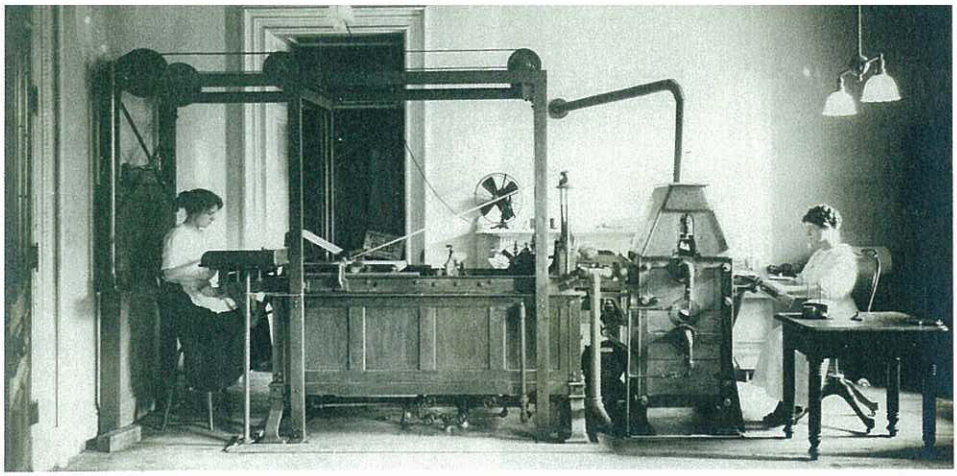
Producing dried pulp "blankets," 1912.



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Currency laundering machine, 1912.

own model. A perfected machine capable of laundering 30,000 to 40,000 notes a day was put in service in 1912. Additional machines were built and sent to Treasury offices around the country.[15]

Once laundering machines were installed, there was a significant drop in note production as more redeemed notes were put back into circulation and not replaced with new notes. The resulting decline in currency production waste and in redeemed currency destroyed also meant a reduction in paper going to the macerator and pulp production.

Unfortunately, the laundering of soiled notes only continued for a few years, ending in 1918. Supply shortages caused by World War I forced the use of high-cotton paper in currency production. This paper did not stand up well to washing, and the practice was ended. Laundering was not revived by the Treasury after the war despite the return to all-linen currency paper because of growing concerns that the washed currency was easily counterfeited.[16] Consequently, pulp production (now in liquid form rather than in dry, blanket form) jumped markedly after 1918 and stayed at high levels for years to come.[17]

Historical Resource Center, BEP

Currency incinerator, 1970.

Unable to reduce waste by laundering and reusing currency, the BEP looked for other ways to cut down on the amount of paper going into the macerator. In fiscal year 1927, BEP examiners introduced the practice of "partlying." Before this time, a defective note on a sheet of currency led to the whole sheet being removed from production and destroyed. To reduce spoilage, the Examining Division began marking individual defective faces and backs with either a pencil mark or a cancellation hole punched through the note. Workers dubbed this process as partlying. These individual notes would be removed and destroyed, saving the other notes on the sheet. Partlying reduced spoilage by about 75%, leading to a decrease in waste and pulp production.[18]

Beginning in 1919, the Engineering and Machine Division handled maceration and pulp production. Over the next 10 years, the division would produce, on average, 5.8 million pounds of wet pulp per year with an annual income of around $35,000. A 1929 study showed that de-inking pulp by washing and boiling it would increase its market value.Two years later the BEP adopted the new de-inking process in the production of pulp. New equipment was ordered and installed. The cost of pulp production was less than the previous method and would result in a higher quality pulp for sale.[19]

However, the market for pulp was weakening as the effects of the Great Depression spread throughout the country. By the end of 1931, prices paid for pulp did not cover the cost of preparing it for shipment. Some pulp was sold in the early 1930s, but most had to be hauled to the dump.[20] By 1934, the market for pulp had collapsed. Prices fell to $2.50 per ton when anyone would buy. The BEP had no recourse but to discard almost all of the pulp it produced.[21] In 1935, 2,341,117 pounds of dry paper was macerated but only 490,950 of wet pulp could be sold. The next year, there was no market for pulp, and it was all dumped — 864 truck loads. In 1937, Schapiro and Sons were the only purchasers of pulp at $.42 a ton. There were no bids for pulp in 1938, and it was all thrown away.[22]

Over the next decade, the BEP explored various ways to deal with its waste paper from currency and security production. In 1940, while cancelled notes and securities were still macerated, distinctive paper trimmings were now taken to the District of Columbia incinerator for disposal, reducing the amount of paper going to the macerator by 490,000 pounds.[23] This practice was continued the next year as there was still no market for the BEP's pulp. Finally, in January 1943, maceration was abandoned and the BEP started burning currency paper.[24] The BEP remodeled its own incinerators to take on the job.[25]

No one at the BEP was happy with this turn of events. Burning resulted in the waste of valuable paper and the problem of smoke in downtown Washington, DC. As an alternative, in 1945, the BEP experimented with shredding and returning the shreds to Crane paper. However, the shredding equipment of the time only made it possible to securely shred paper trimmings and not redeemed and mutilated currency, so burning of these items continued.[26]

Burning was carried on until the 1970s when, as had happened 100 years earlier, there arose concerns over pollution. This time the answer was not maceration and the creation of pulp, but shredding, creating shredded currency residue. The new equipment used by the BEP and the Federal Reserve Banks allowed for the creation of shreds that could not be misused or reassembled into notes. Shreds began to be sold in bulk with companies experimenting in their use in products as diverse as roofing tiles and fuel pellets.[27] Many people are most familiar with the use of shreds in the production of souvenirs, just like the paper pulp of the late 1800s.

Looking at the first 100 years of the BEP's handling of currency paper, it is evident that the BEP basically followed the now popular maxim, "Reduce, Reuse, Recycle." The BEP has always sought to reduce the amount of currency paper wasted by minimizing spoilage in

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prices since 1830 and posts new housing data without a two-month lag found with other popular real estate indexes. Since 1960, when the WIREI crossed above its 20-month moving average, there was strong evidence that the bear market was reaching its end.

Similar to stock market volume, the number of new houses sold and the number of months they were on the market measure overall housing activity. Generally speaking, continuous increases in sales volume along with a dramatic decline in the amount of time it takes to sell a house precede any improvement in real estate prices. Over the last 60 years, housing bear markets ended when "Months for Sale" dropped below 3.5 months.

Unfortunately, the WIREI is still in a downtrend, nationwide sales activity is still weak and the average months to sell a new home is nine. It could easily take another year to dry up excess housing inventory and for mortgage credit to ease enough to stimulate new home purchases. $

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production through the use of technology and craftsmanship. In addition to creating the partlying process, the BEP also invented a way to reuse currency paper and, thereby, reduce new currency production in the early 20th century. Through its laundering process, the BEP was able to significantly reduce the amount of paper going into its macerator to be turned into pulp. Finally, the BEP has continually tried to find ways to recycle currency paper into a marketable product that could be used again. For many years, this was in the form of pulp. Yet, after the market for pulp collapsed, it took almost four decades for pulp to be replaced by shreds. So, for the BEP, we could replace "Reduce, Reuse, Recycle" with "Partly, Launder, Macerate/Shred." Though not as catchy, this phrase reflects a century of efforts by the BEP in recycling currency paper. $

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