

# When The Legendary *Burlington Zephyr* Passed Through Paoli

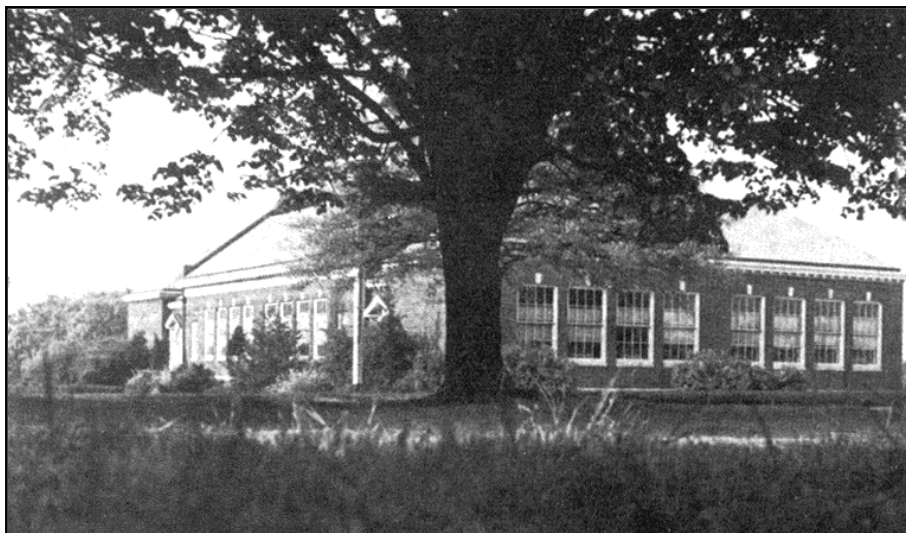
Roger D. Thorne

One never knows what a day may hold, and often it is the unexpected event on an otherwise forgettable day that is remembered for the rest of one's life.

Such a day was Wednesday, April 18, 1934 at the "new" Paoli Grammar School, built just seven years before on the south side of East Central Avenue at the corner of Fennerton Road, on a six-acre parcel of the old Biddle estate in Paoli, Pennsylvania. When the school was opened in the fall of 1927, it operated under the then-traditional "8-4" curriculum (eight grades in the elementary school, followed by a four-year course at Tredyffrin-Easttown High School).<sup>1</sup>

The school's principal, Kenneth Mateer, was an administrator well regarded in the community for his progressive ways in exposing his charges to education in many forms, including the wider world that

many of them may not otherwise have experienced. For example, when the National Broadcasting Company's famous music director Walter Damrosch began hosting the network's *Music Appreciation Hour*<sup>2</sup>, Mr. Mateer made that Hour part of the curriculum for the school's 7<sup>th</sup> and 8<sup>th</sup> graders, allowing them to listen to these radio lectures on classical music<sup>3</sup> and use the textbooks and worksheets provided to schools by the network.



The Paoli Elementary School, built in 1927, continued to serve Tredyffrin Township until 1981. This view of the school, shot from the embankment of the PRR "Main Line" looking toward the back of the school, was taken by Thomas Skilton in the 1930s. *Image courtesy of the Tredyffrin Easttown Historical Society.*

One of the 7<sup>th</sup> graders that April day in 1934 at Paoli Grammar School was Ruth Esherick, one of three children of sculptor and artist Wharton Esherick. Seventy-six years later, Ruth Esherick Bascom vividly remembers another example of Mr. Mateer's creativity in conveying the joy

of learning to his students beyond that found in their "reading, 'riting & 'rithmetic'."

The rear of the school's property abutted the "Main Line" of the Pennsylvania Railroad, the connective between Philadelphia and Pittsburgh, and one of the

busiest rail corridors in the nation. Any reasonably observant boy or girl in Paoli in 1934 would have seen, and could perhaps identify, one or another of the massive “Pennsy” steam locomotives, the P5A electric locomotives, or even the newly introduced GG1 electric locomotive. But that morning of April 18<sup>th</sup>, Mr. Mateer made a surprising announcement to the whole school, inviting students and teachers alike to leave their classrooms on this beautiful spring day and walk back to the edge of the property and take a seat along the grassy railroad embankment. The purpose of this invitation, he said, was that a “very special train” was shortly going to pass through Paoli, and he wanted everyone to see it.<sup>4</sup>

But even Mr. Mateer could not have known just how special this train would be to the history of American railroading.

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The Edward G. Budd Manufacturing Company of Philadelphia was founded in 1912, and for most of its first two decades it built automotive wheels and body panels. The firm's fortunes rose with the burgeoning auto industry through the 'teens and '20s.<sup>5</sup> In fact, by 1920 the Budd Company had become the nation's largest manufacturer of pressed-steel, all-welded automobile bodies that were shipped to all the car mak-

ers in Detroit, and many abroad.<sup>6</sup> But as the Great Depression ground down the country's economy, so too the company's fortunes fell, and in an internal 1933 document, the founder declared that " . . . We have to develop a business outside of the automobile business."<sup>7</sup>

That same year, Ralph Budd [no relation to Edward G. Budd], the new president of the Chicago, Burlington, & Quincy Railroad (CB&Q), based in Chicago, was channeling his creative talents to boost his road's passenger traffic at a time when Americans were not traveling like they used to. Ralph Budd had learned that the E.G. Budd Company was building lightweight passenger cars with a material called “stainless steel,” and he made the trip to Philadelphia to visit with Edward Budd to learn more. He was tremendously impressed with what he saw, and in June Ralph Budd returned to Philadelphia to negotiate with E. G. Budd the design details for the CB&Q's first streamliner.

Up to that time trains had never been truly streamlined, so the Budd team creatively used many ideas from aircraft design to create a revolutionary train that would reduce weight, enhance airflow, and reduce drag while still being beautiful and luxurious. The three-car articulated train approved by Ralph Budd would be nearly 200 feet long yet weigh only



The stainless steel, streamlined Burlington Zephyr, completed by the Edward G. Budd Manufacturing Co. in Philadelphia for the Chicago, Burlington & Quincy Railroad, is powered by a Winton diesel engine, and is America's first diesel, all-steel streamlined train. *Courtesy of Temple University Libraries, Urban Archives, Philadelphia, PA.*

104 tons.<sup>8</sup> [By contrast, the weight of just the steam locomotive and tender used to pull the CB&Q's crack *Aristocrat* service from Chicago to Denver was 359 tons. And a single standard Pullman car tipped the scales at 60 tons.]<sup>9</sup> The unpainted sides of this new train would be of fluted stainless steel sheet, chosen not only for its beauty but also for ease of maintenance and

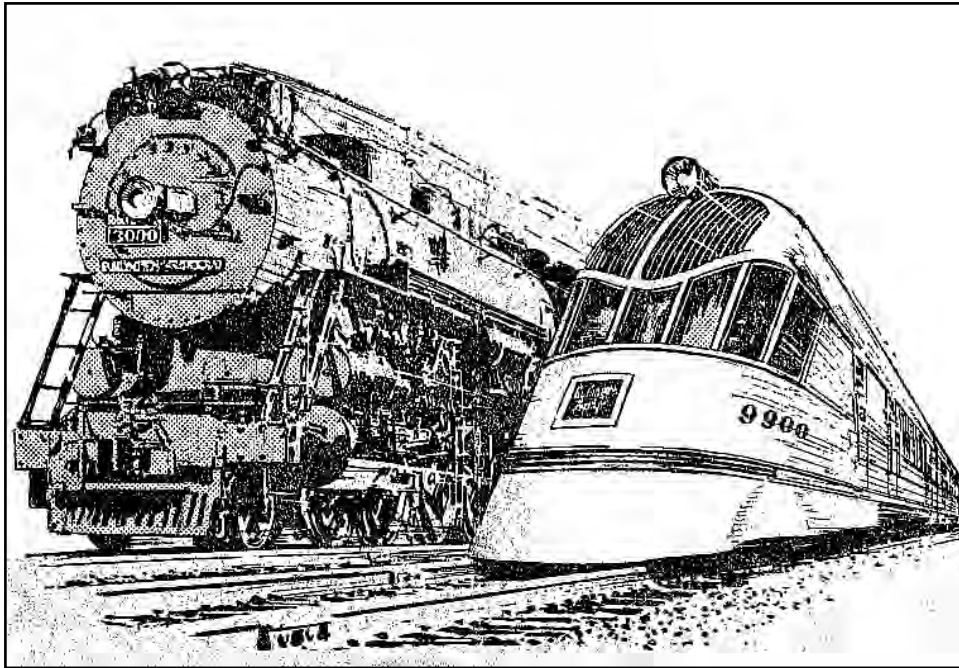
the extra strength of corrugation.<sup>10</sup> Indeed, the 23 tons of stainless steel used in its construction represented the largest application of this metal in any structure to date.

The front of the train would slope down like a shovel for reduced

wind resistance, and would have no protruding handles or rivets that could cause drag, only smooth shot welds. The underside of each car would be completely enclosed to reduce resistance. In fact, so successful was the Budd design in streamlining this train that wind tunnel tests conducted at the Massachusetts Institute of Technology determined that, compared to conventional trains of the time, this airfoil reduced wind resistance by 47% at a speed of 95 miles per hour.<sup>11</sup>

The new train would be powered by a recently perfected eight-cylinder, two-cycle diesel engine newly developed by the Winton Engine Corporation, a subsidiary of General Motors. The 600-horsepower diesel engine, compact and light enough to use in his new train, was personally selected by Ralph Budd to

drive the electric generator whose current would be fed to electric traction motors in the train's front end, as well as in providing light, heat, and thermostatically-controlled air conditioning.<sup>12</sup> By placing the engine order with General Motors immediately, Budd assured for Burlington its place in history as having "America's first diesel-powered streamline train."<sup>13</sup>



This interesting graphic, shown along with an accompanying article in the Philadelphia *Public Ledger* dated January 28, 1934, almost three months before the dedication of the Zephyr, has the following caption: "Steam locomotive and motorized 'speed bullet' — a David and Goliath comparison." The depicted steam locomotive is based upon that used to pull the CB&Q's crack *Aristocrat* service from Chicago to Denver.

And the train was intended to be fast — in excess of one hundred miles an hour. In the coming months, the press would refer to this train as the "Silver Streak," the "Speeding Demon," and the "Silver Dragon."<sup>14</sup>

But the name chosen by Ralph Budd for his legendary streamliner

was the Zephyr. . . after Zephyrus, the gentle Greek god of the west wind.<sup>15</sup>

Edward Budd's design and manufacturing team completed the Zephyr in less than ten months, two and a half months ahead of the company's promised delivery date.<sup>16</sup> And two days after the train was completed, April 17, 1934, the Zephyr was ready for its test run. "On its first official test for speed, acceleration and riding qualities, [there were] about 75 railroad executives, newspaper men, and photographers aboard."<sup>17</sup> Perhaps the most engaging description this writer has seen of the test run is found in that evening's Philadelphia *Evening Bulletin*:

"A 197-foot lightning streak on wheels — the Burlington Zephyr — raced over the tracks of

the New York Division of the Reading Railroad today at better than 100 miles an hour. Radical in design, described by its designers as offering a perfect airfoil and a minimum of resistance to the wind, the Zephyr is to be placed in service between Chicago and far west points by the Burlington railroad. From the Budd plant at 22<sup>nd</sup> St. and Hunting Park Ave., the train proceeded to Wayne Junction where it swung onto the right-of-way. It only seemed but a minute until Jenkintown station was passed . . . they opened her up out along a stretch of straight track between Fallsington and Trenton Junction . . . Out beyond Trenton the real speed trial begins . . . Someone caught the name of that town from the station board: Hopewell. The clocker looks up and says, in an even voice, 'We are now going better than a hundred miles an hour.' When the outgoing speed trial is concluded near West Manville, five miles from Princeton, it is officially announced that at one point the train made 107 miles an hour. Over a 4-mile course it averaged 103 miles per hour."<sup>18</sup>

And the engineers stated that she "isn't really 'loosened up' as yet!" They expect the Zephyr to do 120 when finally "broken in."<sup>19</sup>

On the following day the silvery, lightweight, three-car Burlington Zephyr was dedicated at the Pennsylvania Railroad's Broad Street Station, directly across from Philadelphia's City Hall. Beginning at 10:00 a.m., and before an audience numbering in the hundreds, speeches were given over national radio by the presidents of the Pennsylvania Railroad, General Motors, General

Electric, and US Steel. Ralph Budd of the CB&Q declared that "the Burlington Zephyr is a symbol of progress."<sup>20</sup> As a bottle of champagne was broken over the Zephyr's sloping nose by Miss Marguerite Cotsworth, the whistles of all locomotives in the terminal were blown.<sup>21</sup>

Immediately after the dedication, the Zephyr, designated No. 9900, pulled out of Broad Street Station westward over the Main Line of the Pennsy for not one but two demonstration runs that day through Paoli to Downingtown. Ever the promoter, Ralph Budd arranged that a second three-car steam passenger train carrying invited guests follow behind the Zephyr as it made the run back and forth from Philadelphia. In that way the greatest number of business executives and guests could ride in the Zephyr, with passengers transferred from one train to the other at Downingtown.<sup>22</sup>

The weather that early spring day was sunny and delightful, heading for a high of 75°.<sup>23</sup> By 11:30 a.m. the teachers and students from Paoli Grammar School



The "Zephyr" was officially christened at Broad Street Station, Philadelphia, on April 18, 1934. Among the hundreds of distinguished guests is Miss Marguerite Cotsworth, a student at Swarthmore College, whose father is passenger traffic manager of the CB&Q. Miss Cotsworth broke a bottle of champagne over the nose of the train. Immediately after the ceremony the train left for Paoli and Downingtown for the first of two demonstration runs with invited guests. *Courtesy of Temple University Libraries, Urban Archives, Philadelphia, PA.*

were gathered expectantly along the embankment facing the tracks, almost as if they were in an amphitheater. Ruth Esherick (Bascom) clearly remembers that “there were no trees along the railroad at that time, and we had an uninterrupted view of the tracks all the way down past Daylesford.”

“Finally the train appeared, heading west toward us. It was not traveling too fast, and we got to see it real good. It was such a beautiful sight! It was so exciting because it was the first streamliner that any of us had ever seen. The train continued past us all [not stopping in Paoli] on its journey to the west.”<sup>24</sup>

The Burlington Zephyr consisted of three cars carried on four wheel assemblies (trucks). The first car, topped with a huge single headlight, held the engineer’s cab and the diesel engine, a 30-foot railway post office, and a space for baggage. The second car included a larger baggage compartment, a buffet grill, and a 16-foot smoking section for twenty passengers. The third and last car had a 31-foot section with seats for forty persons, and a

solarium-lounge at the end of the car with club chairs for twelve. The train had a total of 72 seats, and could carry 25 tons of baggage and express freight.<sup>25</sup>

As the Zephyr arrived into Downingtown at 11:53 a.m. it was welcomed by some 3000 people lining both sides of the tracks. The train was of special interest to Chester County because the framework for the Zephyr’s diesel power unit had been welded at the Coatesville plant of Lukenweld, Inc., a subsidiary of Lukens Steel Company.<sup>26</sup> Continuing to the station in

West Downingtown, the three-car steam train, which had run with the streamliner from Philadelphia, also arrived. Both trains were filled with railroad officials, car manufacturers, and guests. After pulling onto the ‘Y’ which connected the New Holland branch of the Pennsy with the Main Line, passengers from each train exchanged places during the short ten-minute visit so that everyone could say they had experienced the Zephyr firsthand. Then the trains returned to Philadelphia.<sup>27</sup>

Following early afternoon festivities at Broad Street Station, the Burlington Zephyr made its second west-



Six years after the legendary dedication of the original Zephyr in Philadelphia, a sister Zephyr arrives in East Dubuque, Illinois, in full revenue service, April 1940. *Courtesy of Library of Congress Prints and Photographs Division, Washington, DC.*

ward run through Paoli in the late afternoon, arriving in Downingtown at 4:25 p.m. Passengers reported that the train reached speeds at different times in excess of eighty miles an hour.<sup>28</sup> A steam passenger train carrying invited guests made the tandem run from Philadelphia. As before, the passengers were transferred from one train to the other at Downingtown during the longer 45 minute visit. The trains then once again returned through Paoli to Broad Street Station, where the following day some 24,000 people lined up to see the streamliner.<sup>29</sup>





After 25 years of faithful service, the Burlington Zephyr, the original 9900, was retired from revenue service and donated to the Museum of Science & Industry in Chicago in 1960 where it remains on exhibit to this day. *Courtesy of the Museum of Science & Industry.*

### Epilogue

During the succeeding three weeks the Burlington Zephyr was taken on tour to thirty cities in the East, during which close to a million people went through the train.<sup>30</sup> But Ralph Budd had another dream, and he intended to achieve it.

The Chicago *Century of Progress* Exposition would open its second season at the end of May, 1934. One of the major attractions would be the “Wings of a Century Pageant,” designed to show America’s progress in transportation from the Indians to the modern steam locomotive. Budd intended to display his Zephyr, with much fanfare, in that pageant which was scheduled to open on the evening of Saturday, May 26, 1934.

The Burlington’s crack steam-powered train on the Denver-to-Chicago run, the *Aristocrat*, took almost twenty-six hours to complete the trip, and had to stop

several times along the way to take on water, coal, and a new train crew.<sup>31</sup> Ralph Budd intended his Zephyr to leave Denver at dawn on May 26 and race the 1,015 miles non-stop to Chicago, pulling in at dusk just in time for a grand entrance at the Exposition.

And the CB&Q did it!

The Zephyr’s dramatic dawn-to-dusk, nonstop run from Denver to the stage of the “Wings of a Century Pageant” in Chicago has become the stuff of legend. At 8:09 p.m., the Zephyr broke the tape at the Burlington’s Halstead Street Station on Chicago’s near-south side, and then continued on to the Exposition Grounds along Lake Michigan. It was a world’s record for the longest and fastest nonstop railroad run, having sped 1,014.4 miles, across one-third of the continent, in just thirteen hours, four minutes, and fifty-eight seconds. The average speed was 77.61

miles per hour. The run was made in a little less than half the time required by the *Aristocrat*.<sup>32</sup>

On November 11, 1934, the Zephyr, later renamed the Pioneer Zephyr, went into daily operation with turnaround service between Kansas City, Missouri, and Lincoln, Nebraska. In so doing it became the first lightweight streamliner in regular revenue operation. It remained in service for 25 years, and covered 3.2 million miles. The train was then donated to the Chicago Museum of Science & Industry, where it remains on prominent display today. All lightweight streamliners built over the succeeding years are descendants of that little silvery, fluted, three-car Zephyr.<sup>33</sup>

But in the end, this national narrative overlays a long-remembered local story because of people like Mr. Mateer, for whom education was a passion not limited to the sum of books and memorization. His enthusiasm allowed local people to witness an historic and memorable event that otherwise may well have passed unnoticed. Men and women with that passion and excitement are an example to us all.

*Roger Thorne is president of the Tredyffrin Easttown Historical Society. As a boy of nine in 1954, he accompanied his parents on a never-to-be-forgotten, cross-country journey on the legendary "California Zephyr" from Chicago to Oakland, igniting a lifelong love of railroading.*

## NOTES

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