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The History Teacher, Vol. 33, No. 2. (Feb., 2000), pp. 241-256.

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The Times They Are A-Changing: The Influence of Railroad Technology on the Adoption of Standard Time Zones in 1883

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Senior Division Paper, 1999 National History Day Competition

Having cleared its path so far, society went back to its work, and threw itself on that which stood first—its roads. The field was vast; altogether beyond its power to control offhand; and society dropped every thought of dealing with anything more than the single fraction called a railway system. This relatively small part of its task was still so big as to need the energies of a generation, for it required all the new machinery to be created—capital, banks, mines, furnaces, shops, power-houses, technical knowledge, mechanical population, together with a steady remodeling of social and political habits, ideas, and institutions to fit the new scale and suit the new conditions. The generation between 1865 and 1895 was already mortgaged to the railways, and no one knew it better than the generation itself.¹

THE STORY OF THE ADOPTION of Standard Time in 1883 is an excellent example of what Henry Adams was describing in 1907 when he spoke of the impact of railroad technology after the Civil War. This story is not well known, but it illustrates how technology created new problems, caused people to view their world differently, and led to changes in everyday life that were unexpected then, and are taken for granted today. The growth of the railroads created a new time keeping problem, and it was the railroad companies that played the biggest part in solving this problem.

Indeed, the growth of the railroads after the Civil War was dramatic. In 1830 there were only twenty-three miles of railroad track in the United States. By the end of the Civil War the railroads had grown to 35,000 miles of track, and by 1883, the year Standard Time was adopted, there were over 93,000 miles of track.² This enormous growth enabled people and products to move around the country more quickly, efficiently and safely than ever before. For example, a trip from Boston to Washington

that formerly took several weeks now took less than a day.³ Because they could travel more quickly, people began to interact more frequently with others from distant places. This growth of a new technology caused great changes in both the economy and the society, making them both more national and less local.

While the speed with which people could travel made their lives easier in many respects, it also caused a new problem. The locally based lives to which people had been accustomed included locally based time keeping. Every town kept its own local time, based on the sun. Towns would set their clocks for noon when the sun was directly overhead. Because the earth rotates fifteen degrees of longitude every hour, sun time is different from east to west. This meant that very few towns had the same time. For instance, when it was noon in Washington, it was 12:02 in Baltimore, 12:08 in Philadelphia, 12:12 in New York, 12:17 in New Haven, 12:18 in Hartford, and 12:24 in Boston⁴ (see Figure 1). Depending on how one counted, there were as many as several hundred local times in the United States.

Railroads usually operated on the time of the nearest prominent city, but one could never be sure of the time being used without checking. This often made for a very confusing situation. "In the railroad station in Buffalo, there were three clocks—one set to New York time, by which the New York Central Railroad operated; one set to Columbus time, by which the Lake Shore and Michigan Southern and other railroads were operated; and the other set to local Buffalo time.... The situation was even worse in Pittsburgh, where there were six different time standards for the arrival and departure of trains."⁵ As *Harper's Magazine* described the situation in 1883:

...in respect to time, the whole country was a pathless wilderness. Any traveler trying to wend his way across it was doomed to bewildering confusion. His watch was to him but a delusion; clocks in stations, staring at each other in the face defiant of harmony both with one another and with surrounding time, all wildly at variance with his watch, were wholly baffling to all intelligence, and timetables were to him but Sphinx's riddles. His only satisfaction could come from resting blindly in ignorance.⁶

Clearly, the railroads had created a problem while improving transportation: the old system of local time no longer worked. In the end, it was also the railroads that solved the problem.

As they began to confront this problem, the railroads were fortunate to have some examples to follow and people who contributed their imagination and influence. The earliest example of standard time occurred in

Fig. 1.

Page from *Official Railway Guide*,
Centennial Facsimile of 1868 edition, New York: National Railway
Publication Company, 1968 (Allen Family Collection).

COMPARATIVE TIME-TABLE.

Showing the Time at the Principal Cities of the United States, compared with Noon at Washington, D. C.

There is no "Standard Railroad Time" in the United States or Canada but each railroad company adopts independently the time of its own locality, or of that place at which its principal office is situated. The inconvenience of such a system, if system it can be called, must be apparent to all, but is most annoying to persons strangers to the fact. From this cause many miscalculations and misconnections have arisen, which not unfrequently have been of serious consequence to individuals, and have, as a matter of course, brought into disrepute all Railroad Guides, which of necessity give the local times. In order to relieve, in some degree, this anomaly in American railroading, we present the following table of local time, compared with that of Washington, D. C. :

NOON AT WASHINGTON.	NOON AT WASHINGTON.	NOON AT WASHINGTON.
Albany, N. Y. 12 14 P.M.	Jackson, Miss. 11 08 A.M.	Petersburg, Va. 11 50 A.M.
Augusta, Ga. 11 41 A.M.	Jefferson, Mo. 11 00 "	Philadelphia, Pa. 12 08 P.M.
Augusta, Me. 12 31 P.M.	Kingston, Can. 12 02 P.M.	Pittsburg, Pa. 11 48 A.M.
Baltimore, Md. 12 02 "	Knoxville, Tenn. 11 53 A.M.	Plattsburg, N. Y. 12 15 P.M.
Beaufort, S. C. 11 47 A.M.	Lancaster, Pa. 12 03 P.M.	Portland, Me. 12 23 "
Boston, Mass. 12 24 P.M.	Lexington, Ky. 11 31 A.M.	Portsmouth, N.H. 12 25 "
Bridgeport, Ct. 12 16 "	Little Rock, Ark. 11 00 "	Providence, R. I. 12 23 "
Buffalo, N. Y. 11 53 A.M.	Louisville, Ky. 11 26 "	Quebec, Can. 12 23 "
Burlington, N. J. 12 09 P.M.	Lowell, Mass. 12 23 P.M.	Racine, Wis. 11 18 A.M.
Burlington, Vt. 12 16 "	Lynchburg, Va. 11 51 A.M.	Raleigh, N. C. 11 53 "
Canandaigua. 11 59 A.M.	Middletown, Ct. 12 16 P.M.	Richmond, Va. 11 58 "
Charleston, S. C. 11 49 "	Milledgeville, Ga. 11 35 A.M.	Rochester, N. Y. 11 57 "
Chicago, Ill. 11 18 "	Milwaukee, Wis. 11 17 "	St. Louis, Mo. 11 07 "
Cincinnati, O. 11 31 "	Mobile, Ala. 11 16 "	St. Paul, Min. 10 55 "
Columbia, S. C. 11 44 "	Monroeville, Vt. 12 18 P.M.	Sacramento, Cal. 9 02 "
Columbus, O. 11 36 "	Montreal, Can. 12 14 "	Salerno, Mass. 12 26 P.M.
Coscord, N. H. 12 23 P.M.	Nashville, Tenn. 11 21 A.M.	Savannah, Ga. 11 44 A.M.
Dayton, O. 11 32 A.M.	Natchez, Miss. 11 03 "	Springfield, Mass. 12 18 P.M.
Detroit, Mich. 11 36 "	Newark, N. J. 12 11 P.M.	Tallahassee, Fla. 11 30 A.M.
Dover, Del. 12 06 P.M.	New Bedford. 12 25 "	Toronto, Can. 11 51 "
Dover, N. H. 12 37 "	Newburg, N. Y. 12 12 "	Trenton, N. J. 12 10 P.M.
Eastport, Me. 12 41 "	Newcastle, Del. 12 05 "	Troy, N. Y. 12 14 "
Frankfort, Ky. 11 40 A.M.	New Haven, Ct. 12 17 "	Tuscaloosa, Ala. 11 18 A.M.
Fredericksburg. 11 58 "	New Orleans, La. 11 05 A.M.	Utica, N. Y. 12 08 P.M.
Galveston, Texas. 10 40 "	Newport, R. I. 12 23 P.M.	Vincennes, Ind. 11 19 A.M.
Halifax, N. S. 12 54 P.M.	New York, N. Y. 12 12 "	Wheeling, Va. 11 46 "
Harrisburg, Pa. 12 01 "	Norfolk, Va. 12 03 "	Wilmington, Del. 12 05 P.M.
Hartford, Ct. 12 18 "	Northampton, Ms. 12 18 "	Wilmington, N. C. 11 55 A.M.
Huntsville, Ala. 11 21 A.M.	Norwich, Ct. 12 30 "	Worcester, Mass. 12 21 P.M.
Indianapolis, Ind. 11 36 "	Pensacola, Fla. 11 20 A.M.	York, Pa. 12 02 "

By an easy calculation, the difference in time between the several places abovenamed may be ascertained. Thus, for instance, the difference in time between New York and Cincinnati may be ascertained by simple comparison, that of the first having the Washington noon at 12 12 p. m., and of the latter at 11 31 a. m. ; and hence the difference is 41 minutes, or, in other words, the noon at New York will be 11 19 a. m. at Cincinnati, and the noon at Cincinnati, will be 12 41 at New York.

England. In 1848, facing a time keeping problem similar to what later occurred in the United States, the entire country converted to one standard time, based on the time of the zero meridian at the Greenwich Observatory. Within the United States, the first person to propose the idea of standard time zones was Professor Charles F. Dowd, the principal of a girls' school in New York State. He understood that the many local times created a problem for the railroads, so in 1869 he presented a possible solution to the railroads, and published it in a report in 1870.⁷ He had in mind a system of four standard time zones, similar to the ones used today—hour zones, each 15 degrees of longitude apart. However, he was not able to convince the railroads to adopt his plan, because the railroads did not yet think the problem was serious enough for them to go to the trouble of making a radical change. Moreover, while in theory Dowd's plan seemed attractive, there were many practical details he had not resolved, such as exactly where to draw the lines between the zones in order to cause the least disruption.

Meanwhile, a number of influential scientists began to think about the problem. Two of the earliest were Cleveland Abbe, Chief of the U.S. Weather Service, and Dr. Frederick A.P. Barnard, President of both Columbia College and the American Metrological Society. The American Metrological Society became an important center for discussion of this issue, and the society soon involved other scientists from major universities and observatories. The interest of scientists proved to be important for several reasons. Scientists were among the best educated people in the country and were widely respected. The field of science was rapidly developing after the Civil War and one of the important areas of science was astronomy. Like other types of scientists, astronomers were improving their equipment. As they progressed they found that the tradition of local time made it hard to share accurate observations of the stars. Thus, the astronomers understood the problems created by the current system of local time, and they were interested in developing a solution. On this issue they had particular influence, because towns used the time that local observatories determined. During the 1870's a number of scientists began to communicate with each other about the time problem and possible solutions. They developed an interesting relationship with the railroad leaders on the issue of time keeping. While the scientists were respected as thought leaders, they did not actually have the power to change the time system. They looked to the railroad leaders, who did not want to make any changes to the time system by themselves unless the scientists could lend their support.

Because there were many more small railroad lines in the late nineteenth century than there are today, the companies needed to meet to-

gether to plan schedules for the benefit of long distance travelers. Twice a year all the northern railways participated in what they called the General Time Convention, while the southern lines participated in the Southern Time Convention. The Secretary of both these groups was William Frederick Allen, the Managing Editor of the *Official Railway Guide*, which contained the timetables of all the railroads in the United States and Canada. The people who came to these conventions were the superintendents and general managers of the railroads. These people had the difficult job of operating the large and complex new railway systems. They were, however, very different from the scientists. Unlike the scientists, few of these men had attended college; they had learned what they needed to know for their jobs by working their way up in their companies. By the time they became superintendents and general managers, they had achieved something the scientists did not have: real power to make important decisions that affected many people.

The railroad officials and astronomers gave the idea of Standard Time its first real test in Connecticut. Because New York City was an important railway center, in May 1880, the Yale Observatory began to send New York City time by telegraph to the railroad offices in Connecticut. Then in December 1880, the New York, New Haven, and Hartford Railway adopted New York City time. The city of New Haven immediately adopted New York time. The railroad companies and the people found that the change worked so well that in March 1881 the entire state of Connecticut adopted New York City time, even though no point in Connecticut was on the New York City meridian.

With the Connecticut example before them, the delegates at the General Time Convention began to examine the time problem more seriously.⁸ In October 1881, the convention assigned its secretary, W.F. Allen, to study the problem. Allen spent the next eighteen months communicating with scientific and railway leaders, developing a plan for time zones that was workable from the railroads' point of view. He published a notice in *The Official Railway Guide* asking for comments on this matter. He published the comments, other articles, and editorials. As he talked to people in and outside the railroad industry, it became clear that the railroads had power to make changes largely on their own. As J.R. Eastman, Professor of Mathematics at the U.S. Naval Observatory in Washington, D.C., wrote to Allen:

...From the standpoint of the [railroad] corporations it is not necessary to consult the wishes of the inhabitants of the cities and towns along their lines in regard to local time. It is not successfully done now. People do not complain because trains are run by a standard differing 20, 40, or 60 minutes from the local time, but because they cannot travel far by rail

before the schedule time is changed to conform to a new standard differing from the first by an unknown quantity; and in a trip of 2 or 3 days the several changes of time beget serious confusion and are the traveler's chief annoyance....⁹

But not everybody agreed that a system of time zones would be a good idea. Four days after Eastman wrote to Allen, Eastman's boss, Rear Admiral John Rogers, Superintendent of the U.S. Naval Observatory, wrote to Allen to recommend that the time tables show local time and standard time, and that the clocks in the stations have two sets of hands. He wrote:

The plan of time zones seems to me a plan for legalizing diversity. It is against diversity that the country protests, as applied to railroad service.... By means of time zones, the sun will not rise when the almanac says it does. Will the community accept this new law, when nature refuses it? On the contrary, men will continue to keep natural time for their daily uses, whatever different practices conventions may recommend.¹⁰

On April 11, 1883, Allen presented his research to the General Time Convention, which was meeting in St. Louis. He gave a convincing speech that standard time was entirely possible and would be beneficial to the railroads and the public. He presented a plan that was configured so that the changes between time zones occurred at places that were convenient for the railroads, such as points where the lines owned by different companies ended. This meant that, unlike Professor Dowd's earlier plan, the lines between the zones were not completely straight. Allen reminded the convention that Standard Time was already implemented in Connecticut and was very successful. He emphasized the significance of this proposal by saying that if Standard Time zones were established, then "local time would be practically abolished."¹¹ He finished his speech by showing two maps and saying:

Contrasting the two maps I ask you which system appears more desirable—the one, as variegated as Joseph's coat of many colors, or the other, with its solid masses of uniform tints; the one representing the barbarism of the past, the other the enlightenment which we hope for in the future.¹²

After a discussion, the convention asked Allen to get the written approval of as many railroads as possible before their next meeting in October. The Southern Railway Time Convention met in New York the following week and agreed with the resolutions of the General Time Convention.

During the next six months Allen printed up maps and explanations of the plan (see Figures 2a/2b) and sent them to the superintendents of most of the 600 railways in the United States and Canada.¹³ He included a form asking

them whether they were in favor of the proposed system; most replied "yes." The Canadian Pacific Railway wrote back that they planned to use the new proposed system throughout their cross-continental main line, which was about to be completed.¹⁴ Many small railways, such as the Kansas City, St. Joseph's, and Council Bluff Railroad, voted in favor, but for practical reasons added that, "Small roads must conform to the time of larger systems adjacent in most cases"¹⁵ Rear Admiral R.W. Shufeldt, the new Superintendent of the U.S. Naval Observatory gave the plan an important boost, saying, "I can assure you of the hearty cooperation of the Naval Observatory in carrying out the recommendations of the St. Louis convention."¹⁶ By the time of the next meeting of the General Time Convention on October 11, 1883, nearly all of the railroads had already voted in favor of the proposed adoption of Standard Time. The convention agreed that the proposed system of Standard Time would be adopted, effective at noon on Sunday, November 18, 1883. The following week the Southern Railway Convention unanimously concurred.

The next step in the process was for the railroads to inform the American public about the change. The railroad officials also visited many city governments and suggested that they make the same change on November 18, 1883. Most cities agreed.

There was a special situation in Washington, D.C. Because Congress had authority over the District of Columbia, the city had to wait for Congress to come back from its recess the following March before the city could officially change its time.¹⁷ The Act to Establish Standard Time in the District of Columbia was the only involvement Congress had with the keeping of time until 1918, when Congress established Daylight Savings Time. The limited nature of the act concerning the District of Columbia and the comment by Admiral Shufeldt emphasize the point that the railroad companies were the ones leading the way for the country on timekeeping, not the Federal Government.

The conversion to Standard Time was a subject of much public discussion during the fall. On Sunday, November 18, 1883, the change went very smoothly. The *New York Herald* commented the next day:

Naturally, those who had the event of the day in their minds, talked about it. Preachers made it a theme in their pulpits. People joked about it; people fibbed about it; and altogether it afforded such food for Sunday gossip as is only offered by something that goes beyond the public pursuits of men and enters into their private lives as part of themselves.¹⁸

While most people were happy about the change, some people were not happy about the power the railroad companies had displayed. As the *Indianapolis Sentinel* said on November 21, 1883:

Fig. 2a.
Map by W.F. Allen (Allen Family Collection).
(Left half of map.)

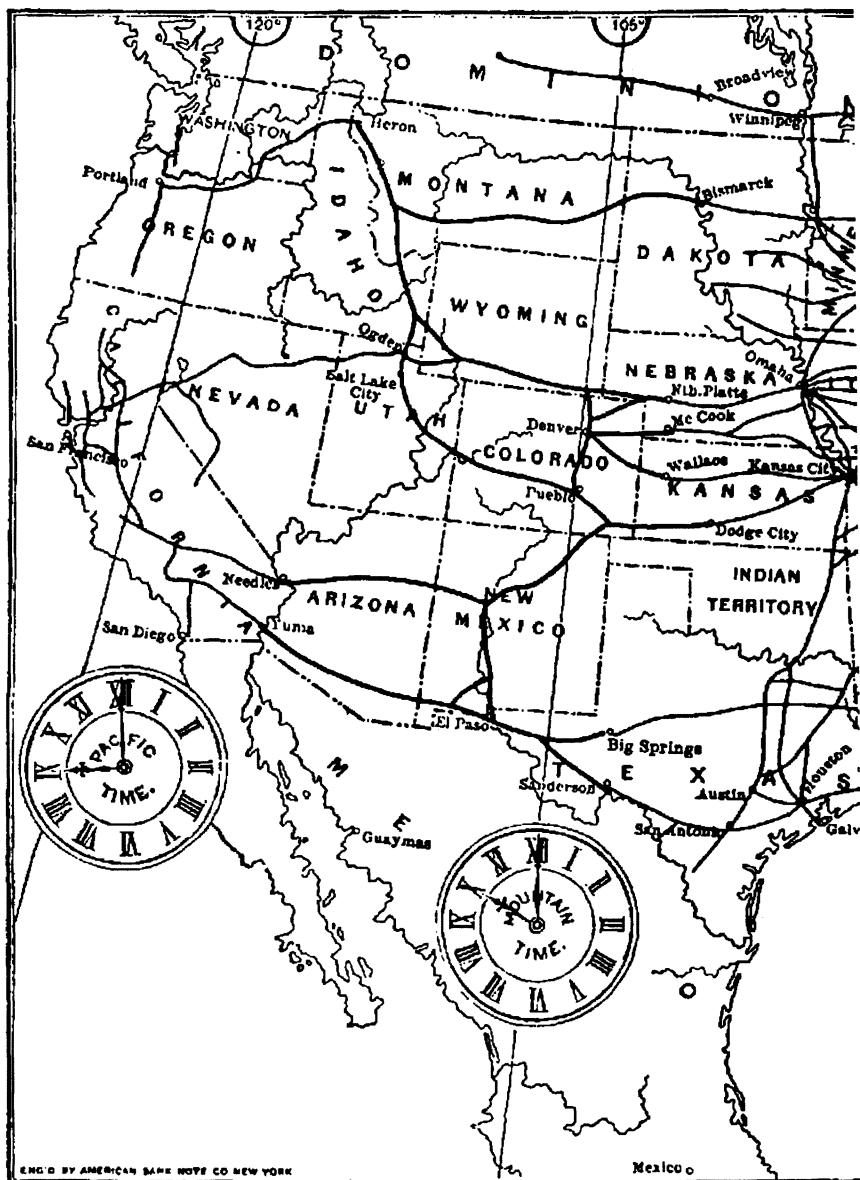
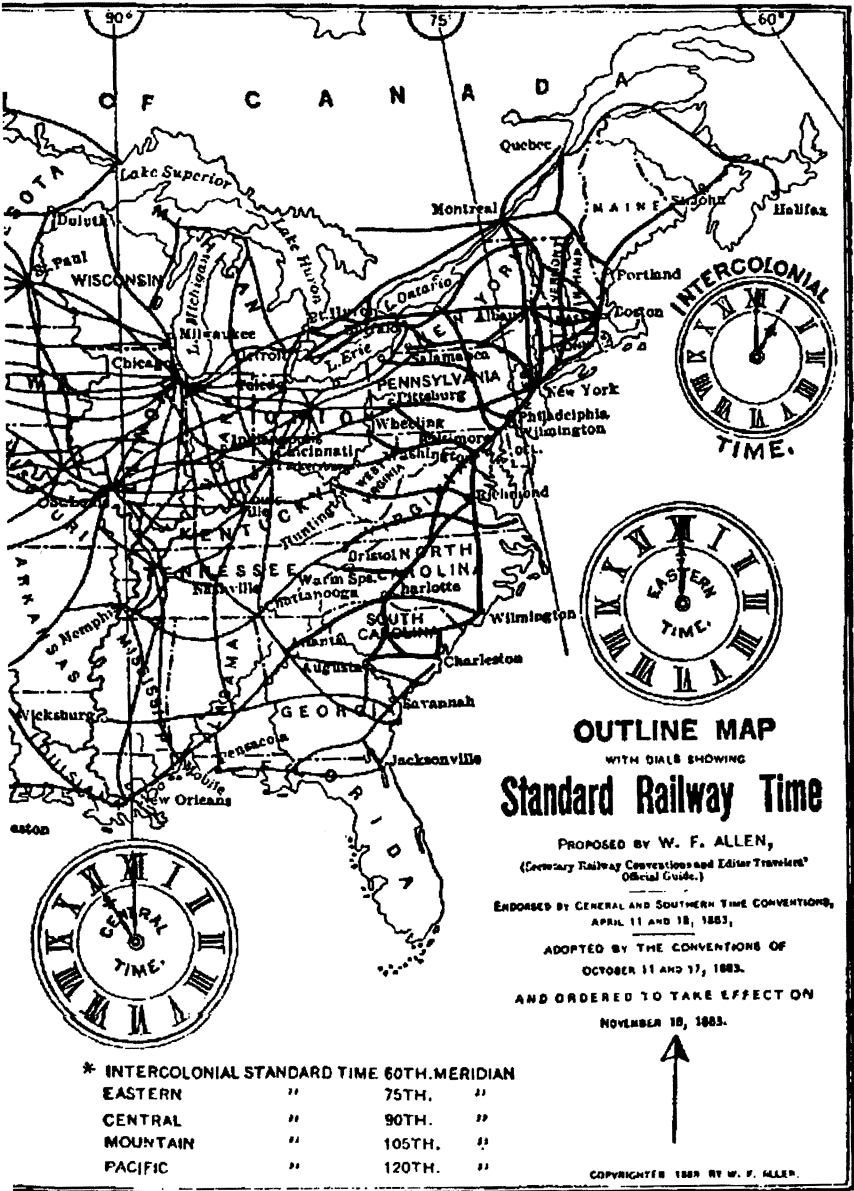


Fig. 2b.
Map by W.F. Allen (Allen Family Collection).
(Right half of map.)



The Railroad Convention, recently in session, determined among other things to have the clocks and watches in the United States set, run and regulated to suit the convenience of their particular branch of business. It was a bold stroke. To regulate the time of this Empire Republic of the World is an undertaking of magnificent proportions. Railroad time is to be the time of the future. The Sun is no longer to boss the job. People—55,000,000 of them—must eat, sleep and work as well as travel by railroad time. It is a revolt, a rebellion. The sun will be requested to rise and set by railroad time. The planets must, in the future, make their circuits by such timetables as railroad magnates arrange.

People will have to marry by railroad time, and die by railroad time. Ministers will be required to preach by railroad time—banks will open and close by railroad time—in fact, the Railroad Convention has taken charge of the time businesses and the people may as well set about adjusting their affairs in accordance with its decree.... We presume the sun, moon and stars will make an attempt to ignore the orders of the Railroad Convention, but they too, will have to give in at last.¹⁹

Most of the country adopted “railroad” time right away and was very happy with it, although a few places waited as long as twenty years to make the change. The railroads were happy with the change immediately. The Old Colony Railroad in Massachusetts wrote to W.F. Allen on February 15, 1884, and said, “All happy on 475 miles of railroad—Don’t want any better time than ‘Eastern Standard.’”²⁰ In response to a survey about the change sent to business people in Buffalo by the local railroad, Mr. E.S. Spaulding responded, “We have suffered no inconvenience from the change from local time to standard time. On the contrary, we have found it very convenient. We would not willingly return to local time.”²¹

Mr. Spaulding’s comment is significant. The railroads had a huge effect on everyday life, including the way people kept time. Not only did the railroad technology improve transportation, but it also helped bring the country together in many other ways. Today Americans think and act in much more national terms than people did before, and the technology of the railroads played a large part in making this change possible. Mr. Spaulding would not willingly return to local time, and if one were to ask most people today, they probably would not even know what local time was. There is a plaque commemorating W.F. Allen and Standard Time in Union Station, Washington, D.C. Thousands of people walk by it everyday, but hardly any of them probably know about the story to which it refers.

It is difficult to imagine anything like the story of adoption of Standard Time happening today. No group of companies—not even the computer companies—have the power to do what the railroads could do in the late 1800s. The editorial in the *Indianapolis Sentinel* (above) describes a widely

held fear of giving too much power to private companies. Thus, since the late 1800s, the United States has given many important powers to the government. As it turns out, timekeeping is again a good example. Today if an area wants to change its time zone, it can seek an act of Congress or submit a request to the U.S. Department of Transportation.²² The most common route is through the Department of Transportation. The Governor of the state or local officials for the area affected must request the change. Then the department must decide whether the change would improve the “convenience of the commerce.” An example of the type of information which the Department of Transportation considers important are the time zones of neighboring towns with which the area interacts. The department lawyers review the application and prepare a recommendation to the Secretary of Transportation, who makes the formal decision.

This decision process is obviously very different from what it was in 1883, and yet it is well accepted. The decision authority is now in the United States Government. The tradition of local time survives only in a manner in which the process begins (by local request) and the railroad companies have nothing to do with the actual decision. According to a Department of Transportation lawyer who works on requests for time zone changes, few people question the process we have today.²³ As Henry Adams said, his generation was heavily influenced by the railways, and whether they liked it or not, they knew it. The story of the adoption of Standard Time gives an important perspective on how our society operates today. Time and times have changed.

Sources

I consulted several types of sources to do this project. The best primary sources are in the New York Public Library, Manuscripts & Archives Division. By special permission I was allowed to work with original documents in the William Frederick Allen Papers on December 29 and 30, 1998. As the great-great-grandson of W.F. Allen, there were several people in my family with whom I talked about Standard Time. My family also has a collection of original and secondary sources about Standard Time.

Annotated Bibliography

Primary Sources

Allen, William Frederick, Papers. New York Public Library, Manuscripts & Archives Division. (The Allen Papers)

These papers were collected by W.F. Allen and donated to the New York Public Library in 1901. The collection includes about 900 incoming letters, 500 outgoing letters,

and many pamphlets, circulars, and maps. These papers are the best primary source of information about the adoption of Standard Time. I have examined all six boxes of materials in the collection, and used some of them as indicated below and in my footnotes.

Box I. Allen, WF, "Standard Time Map". April 1883

WF Allen used this large map at the meetings of the General and Southern Time Conventions in April of 1883.

Box I. An Act to Establish Standard Time in the District of Columbia. US Congress, March 13, 1884.

This is the act that officially established Standard Time in the District of Columbia.

Box I. Canadian Pacific Railway. Letter to W.F. Allen, September 10, 1883.

This letter was in response to a survey Allen sent out asking if the railway favored an adjustment to Standard Time. They said that they were in favor of it, and that their entire line, as soon as it was finished, would use the time of the proposed time zones.

Box I. Kansas City, St. John, and Council Bluff Railroad, Letter to W.F. Allen, September 1883.

This letter was in response to a survey Allen sent out asking if they favored an adjustment to Standard Time. Their response was one that was common; they said that they would change if the other lines around them changed too.

Box I. Old Colony Railroad. February 15, 1884.

This is a response to a questionnaire sent out by WF Allen, asking the railroads if they were happy with the new system of Standard Time. Old Colony Railroad was happy with the new system.

Box III. J.R. Eastman, Professor of Mathematics, US Naval Observatory. Washington, D.C., Letter to W.F. Allen. February 16, 1882.

Eastman points out how useful Standard Time would be, without actually recommending it. He further implies that it is not necessary to ask people for their opinion on the change.

Box III. Rear Admiral John Rogers, Superintendent of the US Naval Observatory. Washington, D.C., Letter to W.F. Allen, February 20, 1882

Rogers recommends that the time tables show local time and Washington Time, and that the station clocks have two sets of hands.

Box IV, Letters Received Vol. II. Rear Admiral R.W. Shufeldt, Superintendent of the US Naval Observatory. Washington, D.C., Letter to W.F. Allen, October 9, 1883.

This letter to WF Allen is significant. Shufeldt, the new Superintendent, says that the Naval Observatory, which is part of the government, will follow the railroads.

Box VI Letters Received. E.S. Spaulding, a Buffalo businessman, in a letter to George S. Gatchell, General Superintendent BNY& RRR. November 17, 1886.

This letter was in response to a letter sent out to local businessmen in Buffalo, NY. Spaulding says that they have found the new system of Standard Time “very convenient” and that they would “not willingly return to local time”.

Allen Family Collection. Washington, D.C.

These papers have been collected by the Allen Family. Some are original documents and others are secondary sources. They include papers originally collected by the National Railway Publication Company, for which W.F. Allen worked. They also include papers collected from other sources.

Allen, W.F., “Outline Map With Dials Showing Standard Railway Time” New York: American Bank Note Company. 1883.

This is the original map that Allen sent out to the Railroads in an effort to convince them of the benefits of Standard Time.

Allen, W.F., *History of the Adoption of Standard Time*. New York: American Metrological Society, 1884.

This history was presented by WF Allen to the American Metrological Society on December 27, 1883. It provides great background information on the events that led up to Standard Time.

Allen, W.F., “Report on Standard Time,” *Proceedings* of the General Time Convention, Appendix of the *Proceedings* of its successor organization, the American Railway Association Washington: American Railway Association. 1893. Page 692.

This report includes the speech by W.F. Allen, delivered to the General Time Convention on April 11, 1883. He gave it to convince the railway operators to agree on Standard Time zones.

Allen, W.F., *Short History of Standard Time and its Adoption in North America in 1883*. New York: Official Railway Guide. 1904.

This book by W.F. Allen gives a general overview of the entire process of adopting Standard Time.

Official Railway Guide, Centennial Facsimile of 1868 Edition. New York: National Railway Publication Co., 1968.

This is a facsimile of the first *Official Railway Guide*. It has indexed to all the railway stations, maps, schedules, and on the first real page of the guide, a time table showing time conversions.

U.S. Department of Transportation, Washington, D.C.

“Procedure for Moving an Area from One Time Zone to Another,” (undated).

This information sheet explains the process for changing time zones today. It was published for general public information.

Personal Interview with Joanne Petrie, Esq., U.S. Department of Transportation, April 19, 1999.

Ms. Petrie is the main lawyer in charge of handling requests for time zone changes. She shared her knowledge of the process with me.

Secondary Sources

Allen Family Collection

Allen, Frederick W., *The Adoption of Standard Time in 1883: An Attempt to Bring Order into a Changing World*. Unpublished Thesis. New Haven: Yale University, May 9, 1969.

This thesis provides a detailed overview of the adoption of Standard Time. It tells the story in chronological order. This was my most valuable secondary source.

Allen, John S., *Standard Time in America*. New York: National Railway Publication Company. 1951.

J.S. Allen provides a very detailed overview of the steps taken to the adoption of Standard Time

American Society of Civil Engineers, "Memoir of William Frederick Allen", *Transactions of the American Society of Civil Engineers*. Vol. LXXX pp 2244-2248.

This is a short biography of William Frederick Allen. It tells his life story, briefly including the story of Standard Time.

Corliss, Carlton J. *The Day of Two Noons*. Fifth Edition. Washington: Association of American Railroads. 1951.

Corliss provides another look on the adoption of Standard Time. Over a period of years he produced a number of editions of the *Day of Two Noons*.

Scholz, Zachary R., "Changing Time; The Implementation of Standard Time in 1883" Unpublished Paper, Washington, 1996.

This paper gives a good general overview of the adoption of Standard Time.

Stephens, Carlene E. *Inventing Standard Time*. Washington, D.C. Smithsonian Institution, 1983.

This booklet was published to go with the exhibit on Standard Time that the Smithsonian Institution, National Museum of American History, presented on Standard Time's 100th Birthday in 1983. It provides a very good overview of the events leading to Standard Time.

Watson, Ripley. "Time for 'Standard' Toast: Have a Happy New Year." *The Journal of Commerce*, January 3, 1983.

This article was written 100 years after the adoption of Standard Time. There is a concise overview of the story of the adoption of standard time. The article also talks about celebrations that were going on for the 100 year anniversary.

The article also talks about celebrations that were going on for the 100 year anniversary.

Other Secondary Sources

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This autobiography not only tells the story of Henry Adams, but also tells about the times in which he lived. The railroads were very important in his time.

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This book has sources and readings on the early history of the railroads.

Notes

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6. Quoted in Stephens, np
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23. Personal interview with Joanne Petrie, Esq., U.S. Department of Transportation, April 19, 1999.