

# Watching Remote Baseball Games Live Before Television

By MARK SCHUBIN

## I. THE GREAT MYSTERY

As is traditional, when he was inducted into the National Baseball Hall of Fame, former Cleveland pitcher Bob Lemon gave a speech. In it, he spoke of being introduced, soon after his birth, to both the game and his future team. “I was born in September, and my mother had to see the World Series. . . at the old opera house in Redlands, California” [1].

At first glance, there is nothing strange about that statement. Baseball is a popular form of television programming in many countries, and the championship World Series gets an especially high audience in the United States [2]. The game was first televised in 1931 (in Japan) [3]. And by 1927 viewers had already watched theatrical large-screen television [4]. But Lemon’s statement is, nevertheless, puzzling.

First, consider the location. The viewing took place in Redlands, CA, near San Bernardino, a part of the Los Angeles television market, but the games of the World Series to which he referred were played in Cleveland and New York City. Today, there is a myriad of ways to get television images between those cities.

The earliest coast-to-coast video connection was used on September 4, 1951, when televised coverage of President Harry Truman’s opening of a peace conference in San Francisco was carried over AT&T’s newly completed transcontinental microwave relay system [5]. Just a few months earlier, before the system reached California, NBC’s Los Angeles television station KNBH (now KNBC) carried General Douglas MacArthur’s address to the U.S. Congress before any of its competitors. They did so by hiring racing pilot Paul Mantz to pick up film recordings in Omaha, NE, then the westernmost point with a live television connection to the eastern part of the country, and fly them

Millions of people in North America were able to remotely enjoy live baseball games for more than half a century before the games were televised. This article traces this pretelevision history of watching live baseball games and provides insight into what led to its ultimate demise.

speedily to Los Angeles; the speech was broadcast six hours after it had been delivered [6].

Also in 1951, what was called “the first large-scale theatre TV program,” the Louis–Savold prizefight, was transmitted live on June 15 [5]. It reached a small number of theaters, the farthest west being in Chicago [7]. Another prizefight later that month, LaMotta–Murphy, was said to have “more elaborate” distribution but reached only 11 theaters, again no farther west than Chicago [8]. The World Series that Lemon’s mother went to see at the Redlands opera house was before 1951, so it could not use transcontinental video-transmission systems.

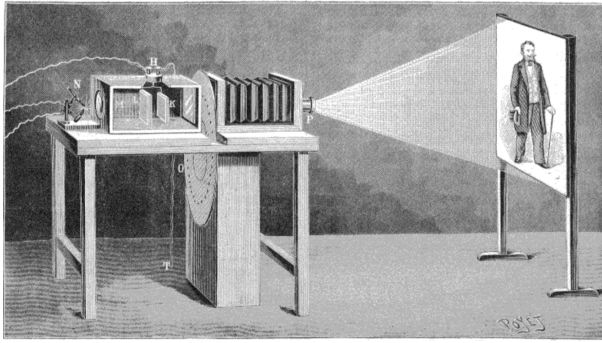
Even assuming some as-yet-unknown method of getting live television signals across the country, there were other problems. The World Series the newborn Lemon and his mother watched was

also before the first televised baseball game in 1931. It was, in fact, before the first radio announcer reported a baseball game in 1921 [9]. It was in 1920.

Theatrical television screens might still seem a possibility. *La Nature* and *Scientific American* were among the many publications that reported in 1898 on the proposal of Swiss physicist Frantz Dussaud for a “téléoscope,” a video system the display of which involved projection onto a large screen [10], [11]. Fig. 1 shows Dussaud’s plan, but there is no known indication it was achieved prior to 1920.

Even earlier, a report of transmitted video was published in a technical periodical in 1879, but the inventor, ophthalmic surgeon Denis D. Redmond, described it as “built-up images of very simple luminous objects” [12]. He also noted that the selenium used in the camera’s

Digital Object Identifier 10.1109/JPROC.2018.2860659



**Fig. 1.** The projecting receiver of Frantz Dussaud's proposed "téléoscope," as depicted in *La Nature* in 1898.

photosensitive elements had the flaw of "requiring some time to recover its resistance," making it unsuitable to capture the rapid motion of a baseball game. It would not be until 1926 that reports of television images of moving recognizable human faces were first published [13]. Even then, the object was primarily the transmission of facial features, not players on a ballfield: "His lips may be seen enunciating each word, and shadows change with changing expressions" [14].

Those reports appeared more than five years after Lemon's 1920 World Series, and it would be longer still before television could be shot outdoors in natural light [15]. When the first televised U.S. baseball game (between college teams) was seen in 1939, a subheadline of a newspaper report revealed the quality of the experience: "Spectators at Screen Unable to Follow Action, but the Announcer Tells Story" [16].

Nevertheless, Lemon's speech was accurate. His mother was in a crowd avidly watching a live baseball game taking place thousands of kilometers away, and there was no difficulty in visually following the action. Furthermore, by 1920, such live remote baseball-game viewing had actually become a fairly common practice, already more than 35 years old. How was that possible?

## II. FROM THE PALEOLITHIC TO THE MIDDLE OF THE 19TH CENTURY

In 1926, *Popular Mechanics Magazine* reviewed the "Wireless of the Ages,"

telecommunications techniques that predated RF transmissions (or even electrical communications by wire): messengers, signaling torches, smoke signals, heliographs, semaphores, etc. It noted that, in 1910, while he was in Africa and roughly 300 km from the nearest telegraph line, explorer Thomas Cameron Taylor learned the outcome of a championship boxing match in Reno, NV, USA, soon after it had been decided, via a drum-based acoustic communications network [17].

It is impossible to say when such nonelectronic telecommunications networks began, but reports of them appeared in the earliest histories of many cultures [18]. It has been suggested that they date back to the Stone Age [19].

Similarly, modern baseball has antecedents. "Baseball in the Stone Age" matches the temporal origins of the game to those of telecommunications [20]. While some of the details of that paper have been disputed, the overall time frame has not [21].

By the middle of the 18th century, the name "base-ball" appeared in a children's book along with such elements of the game as running to bases after batting the ball and returning to "home" [22]. Around the same time, in 1753, a proposal for electrical telegraphy was published (including a description of a method for insulating wire) [23]. In the 19th century, two other technologies brought baseball and telegraphy together: newspapers and railroads.

The earliest newspaper mentions of baseball might have appeared in

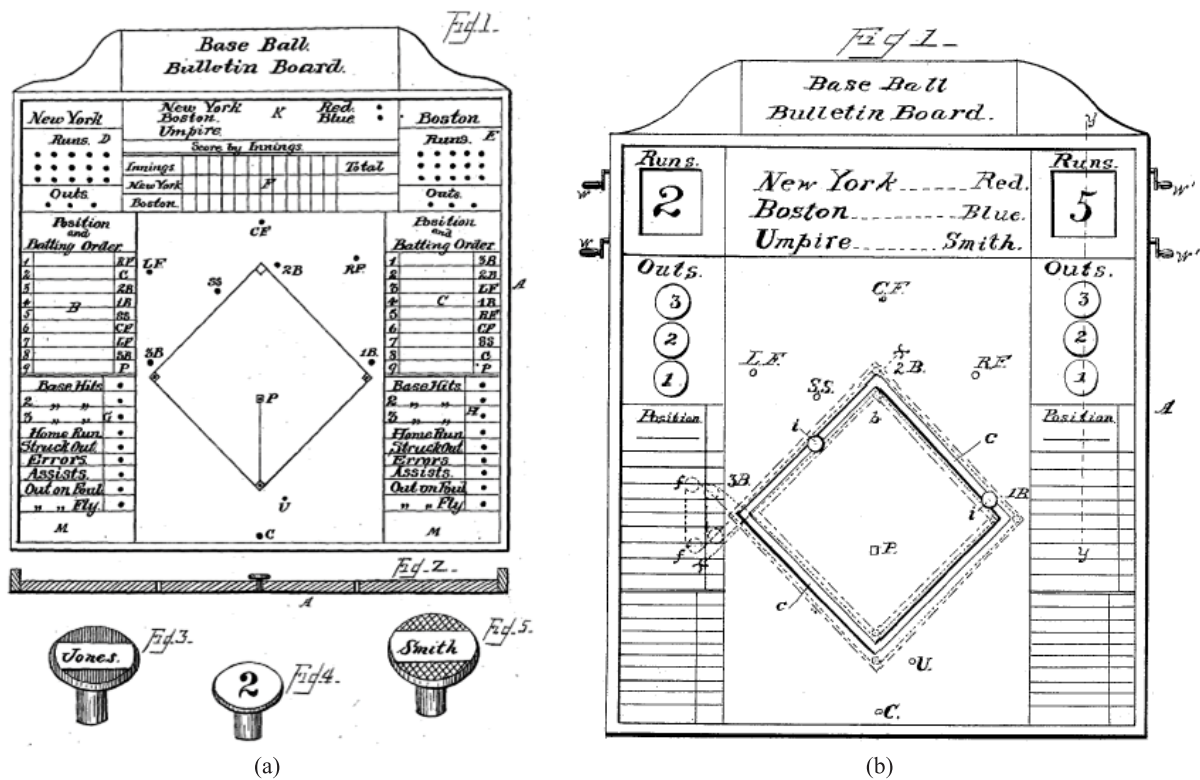
1823, but they offered no scores or details of the games [24]. The pastime was then a local affair without professional players. The first detailed account of a game did not appear until 1845, and the first writers to cover the sport with any frequency began to do so in the following decade [25].

The 1860s brought to baseball professional players [26], touring [27], and telegraphy [28]. With regard to touring, according to baseball historian Peter Morris, "there is good reason to believe that the railroads saved baseball" [27]. Unfortunately, most local fans had neither time nor money to follow their teams to remote games. Instead, they mobbed newspaper and telegraph offices, seeking the latest information about what was going on at remote games [29]. Telegraphic coverage of sporting events had been available since at least 1849 [30].

At first, baseball results were relayed only at the ends of games, but by 1869 they were relayed after each inning. Morris called Massey's Billiard Hall in St. Louis "the prototype of the sports bar" for arranging in 1875 with the telegraph service Western Union to get results every half inning and posting them on a blackboard [31]. Although Massey's might have had the half-inning advantage, they were not alone in St. Louis in posting baseball-game action. "All the newspaper offices and a number of prominent saloons exposed bulletins upon which was represented the result of each inning as telegraphed from the base ball park. Around these central resorts multitudes flocked and received with the wildest cheers the results as announced" [32].

Even before baseball teams went on railroad tours, in 1846, Lord's Cricket Ground in London used telegraph technology to communicate to its scoreboard [33]. By 1880, a large "bulletin-board" in White Stockings Park in Chicago carried "in large figures, legible to all spectators," results of games played elsewhere, delivered by telegraph [31].

As the idea became more popular, some teams tried to block the practice of revealing results live outside the



**Fig. 2.** (a) From U.S. Patent 402 700, E. S. Van Zile, issued May 7, 1899. (b) From U.S. Patent 427 508, E. A. Grozier & F. P. Anderson, issued May 6, 1890.

confines of the ballpark. When the Troy, NY, baseball team refused admission to an operator from the Atlantic and Pacific Telegraph Company in 1880, the man climbed a nearby pole. The team retaliated by ordering “a large canvas to obstruct the operator’s view.” Eventually, Western Union paid for “broadcast rights” [28].

### III. DISPLAY’S THE THING

What turned an information benefit offered by newspapers and other businesses into a paying proposition was the change from the display of mere alphanumeric information to something more closely approximating a ballfield. The earliest such enterprise might have been created in 1884 by three telegraph operators in Nashville, TN, to display a game being played in Chattanooga, TN. One telegraphed each play from the ballpark to a theater, where a second announced it while the third “manipulated cards bearing the names of the players around a painted view of the ball field

which was placed in full view of the audience” [34].

A slight variation appeared in Augusta, GA, in 1885. “We have a blackboard in the Opera House and a diamond on it, with holes punched for each base, with flags showing how each base runner gets his base, with the batting order of each nine. The whole game is sent by telegraph, showing how each player plays. They charge ten cents for each day. We have gotten the games played by our nine in Atlanta, Chattanooga, Memphis and Nashville and will get Columbus and Macon” [35]. Later the same year, a former umpire and manager proposed an indoor “miniature ball field on which every movement of the game will be shown” [28].

In 1886, a significant variation was offered in Atlanta, GA. “Manager Stephens, of the Western Union, and Mr. Charley Howard, of the opera house, have arranged to receive the Atlanta and Charleston game in the minutest details, and promptly at 3 o’clock the umpire will take the

stand and the players will begin to move on the stage of DeGive’s Opera house.” Even in Nashville, baseball audiences had moved from the Masonic Theater to the larger opera house [36]. In Atlanta, “the players will begin to move on the stage” was meant to be taken literally; a newspaper account after the game viewing noted, “A novel feature of the report was the actual running of the bases by uniformed boys, who obeyed the telegraph instrument in their moves around the diamond” [37].

The same year, the three original telegraphers from the first remote viewing in Nashville, now calling themselves Morgan & Company, began touring the country to spread the idea [34]. At the Detroit Opera House, they provided “a huge landscape” “having a well-painted perspective view of a base ball diamond and outfield.” They had also, by that time, introduced the dramatic pauses and emphases familiar in today’s sportscasts. “The audience during the first four or five innings of

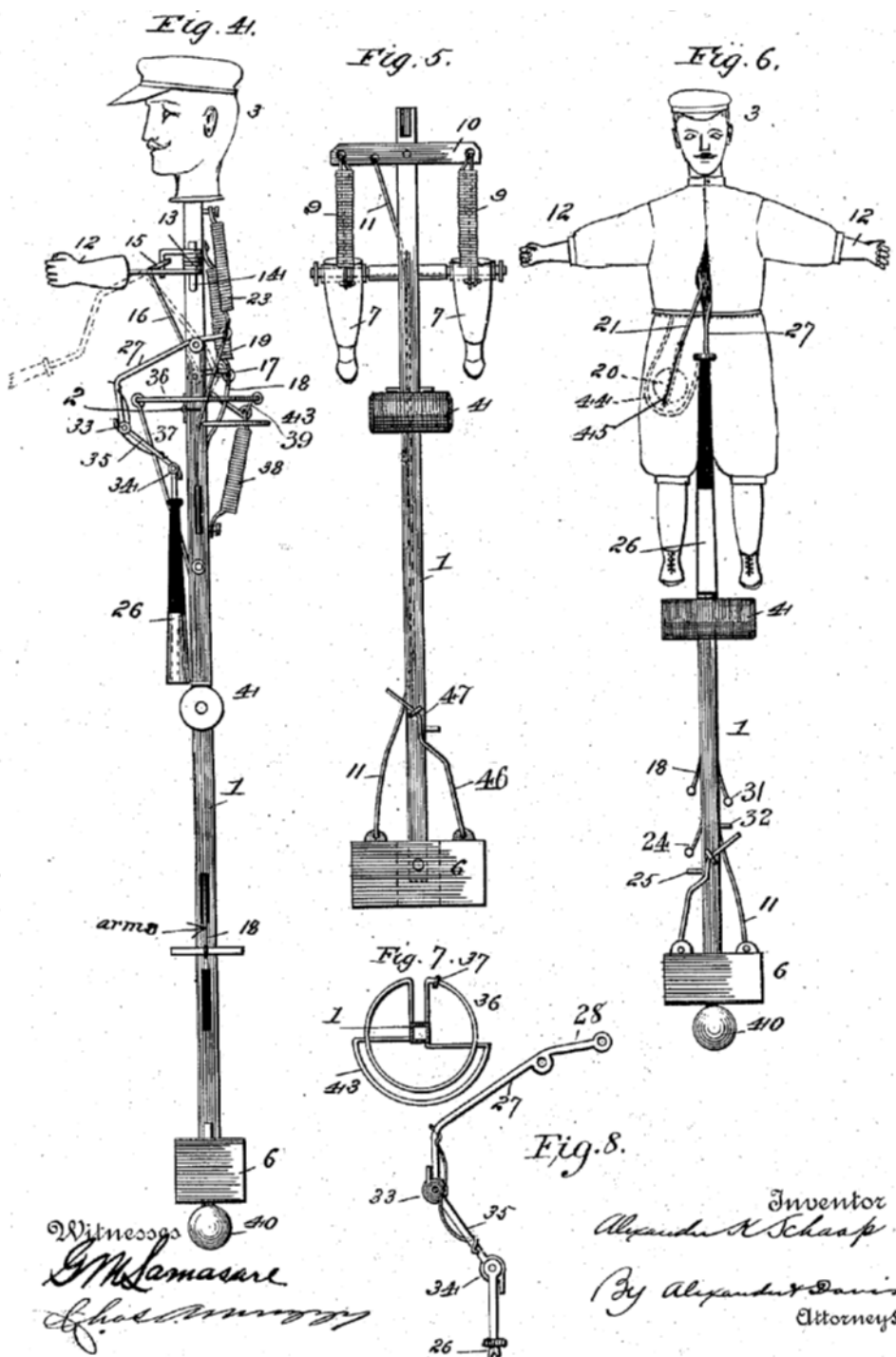


Fig. 3. From U.S. Patent 558 571, A. K. Schaap, issued Apr. 21, 1896.

yesterday's game was wrought up to a very high pitch of enthusiasm. For instance when the operator read—with Dalrymple's name appearing as batsman—'foul fly to left,' the audience fairly held its breath and when the next instant the operator called out 'and out to White,' there

came a storm of applause, just such as is heard on a veritable ball field" [38].

An application for the first patent for a remote live baseball display system [Fig. 2(a)] was filed in 1888 [39]. In hindsight, it seems an almost trivially simple invention: an illustration

of a baseball field on a board with some holes that could be filled with pegs. Nevertheless, when it was installed outside the newspaper *The World* in New York City, "every afternoon while the series of games lasted the board was surrounded by a howling crowd of thousands of enthusiasts,

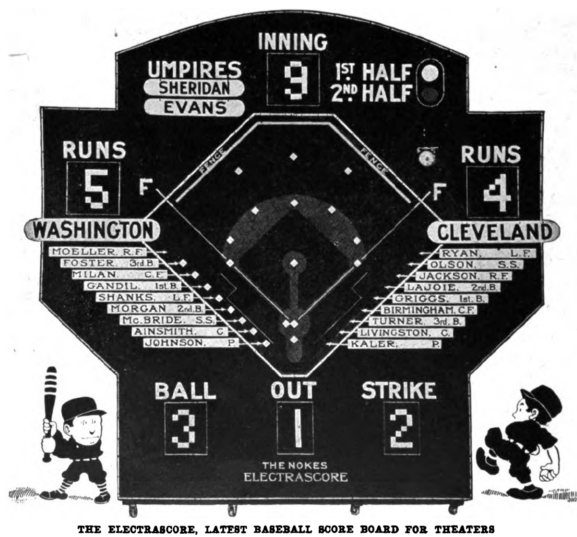


Fig. 4. The Nokes Electrascore, as depicted in Popular Electricity, October 1912.



Fig. 5. Boston Red Sox versus New York Giants in the October 1912 World Series, as depicted on the Rodier Electric Baseball Game Reproducer at The Washington Post, courtesy of Shorpy.com.

who cheered or groaned themselves hoarse as they followed the movements of those pegs from hole to hole” [40]. Another newspaper reported, “The contrivance is somewhat crude, but it has proved most graphic and effective. The crowd in front of the World office day after day has equaled, and sometime excelled, the gathering at the” ballpark [41].

The inventor was Edward Sims Van Zile, editorial writer at the newspaper, encouraged to patent it by publisher Joseph Pulitzer’s private secretary, Edwin A. Grozier, who also bought the rights [42]. Grozier co-patented a variation the following year [Fig. 2(b)] that allowed the pegs to be cranked between bases [43]. Grozier earned enough from the patents to buy a

controlling interest in *The Boston Post* [44].

Electricity was added to the game-information displays the next year in a patent issued to a former Edison employee [45]. Action figures soon followed, as shown in Fig. 3 [46]–[49]. According to one viewer, “Why they bow just as sweetly as ‘real live men’ when applauded” [50]. In all, no fewer than 44 U.S. patents were issued between 1889 and 1927 for displays for remote viewing of live baseball games [51].

Some of the most popular systems were not patented. One was the Electrascore, created by Royce A. Nokes. It used 1500 light bulbs in multiple colors to reproduce the movement of both players and the ball (Fig. 4) [52]. “Every curve of the ball is shown,

and no matter what play is made, it is also shown” [53]. The Rodier Electric Baseball Game Reproducer was another popular system that was not patented (Fig. 5). As it was the scoreboard used by *The Washington Post*, they might have been hyperbolic when reporting, “It was the unanimous opinion of the crowd that it was the finest exhibition of electrical scoreboard work that has ever been witnessed in this city” [54].

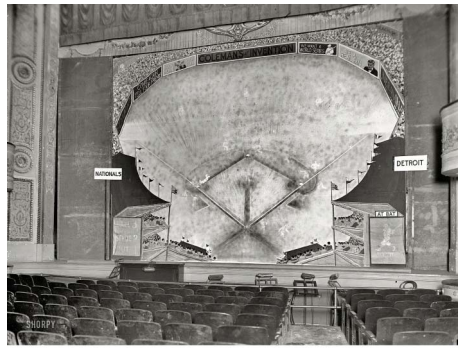
Perhaps the most elaborate display was the (patented) Coleman Lifelike Scoreboard (Fig. 6). It used some 400 slide projectors, was capable of displaying motion sequences, and required as many as seven switch-throwing “attendants” in addition to the telegraph operator/announcer [55].

#### IV. POWERFUL COMPETITION

Joyce Kilmer, poet of “Trees,” wrote in 1916 that James Barrie once changed his suite at the Knickerbocker Hotel in Times Square. “His reason for doing this was that from the window of the quarters first assigned to him he could not get a good view of the electrical scoreboard on the Times building. The world’s series was being played, and the author of ‘Peter Pan’ spent many hours breathlessly watching the ball of light speed across the mimic diamond” [56].

That remote baseball display system was the Star Ball Player. In a competitive system, the Automatic Baseball Play-O-Graph, the ball was a regulation baseball attached to lines that could move it anywhere on the display [57]. With such other names as Compton Electric Base Ball Game Impersonator, Grover’s Electric Marvel Player Board, Jackson Manikin Baseball Indicator, and Tom May’s Electro-Wonder Score Board also in use, Playograph became the generic term, much as Jumbotron became a term applied to many large, outdoor color video displays, not just the version first created by Sony for Expo’85 in Tsukuba, Japan [58].

An actual Play-O-Graph was mounted in Herald Square in New



(a)



(b)

**Fig. 6.** (a) and (b) Front and rear views of a Coleman Lifelike Scoreboard in 1924, inventor George S. Coleman shown, courtesy of Shorpy.com.



**Fig. 7.** Crowd watching the 1911 World Series in Herald Square, from *The Evening Telegram*, October 15, 1911.

York City, home of the newspaper for which it was named as well as the co-owned Evening Telegram.

A crowd estimated at 70 000 watched the 1911 World Series in Herald Square (Fig. 7), considerably more than could fit in the stadium where the game was played [59]. After the crowds caused business to decline year after year, an area

merchant sought an injunction against the use of the Playograph [60].

In 1921, *The Herald* reported, “Watching an actual game is tame by comparison. There your eyes do the work. Nothing is left for the back of your head to do. But watching the New York Herald’s score board poured kerosene upon your imagination and the electric sparks that traced the ball and the hitter touched it off

in explosions” [61]. A reporter heard one newsboy, watching a game at the actual stadium where it was being played that year, remark to another, “Gee, what would you give to be in Times Square right now?” [62]

Although telegraph was most commonly used to deliver the information to baseball displays, there were other options. As early as 1884, a St. Louis saloon used a telephone connection to Union Sportsman Park to get game intelligence [31]. In 1920, a low-power radiotelephone was used to transmit information about the Memorial Day Army-Navy baseball game in Annapolis, MD to the War Department in Washington, DC. It was heard there in a large room and then relayed by high-powered radiotelegraph around the world [63].

The earliest actual baseball radio broadcast is considered to have occurred on August 5, 1921, with Harold Arlin announcing a game on Pittsburgh radio station KDKA. “It was a first for radio and baseball, but it was anything but artistic since it produced a sea [of] silence called ‘dead air,’ for it had not occurred to Arlin and other early announcers to talk between plays” [9]. Initially, in small towns that could not afford telegraphic baseball-news connections, radio was a boon for remote viewing. The 1925 through 1927 World Series games, for example, were seen in Waynesburg, PA on a locally built display, the live information about the games coming from a shortwave radio receiver [64].

Unfortunately for the crowd-display business, radio announcers soon learned how to capture audiences by describing the visual elements, sometimes even adding sound effects [65]. With radio available in homes, there seemed no need to gather in a crowd to watch a display.

Pre-television live remote viewing of baseball games lasted into the 1930s. In 1934, roughly 50 years after viewers in Nashville’s Masonic Theater began watching live baseball games, *The Arizona Daily Star*

in Tucson ran a large ad for its 12th-annual season of sponsored Play-O-Graph viewing of the World Series [66]. There was no 13th.

## REFERENCES

- [1] R. G. Lemon, "Induction ceremonies, National Baseball Hall of Fame and Museum, Inc., Cooperstown, NY, August 9, 1976," Giamatti Research Center, National Baseball Hall of Fame Library, p. 7, col. 2.
- [2] R. Sandomir, "With the greatest stakes comes great viewability," *New York Times*, p. B10, Nov. 2016.
- [3] H. W. Secor, "Baseball game successfully televised" [cover], "Strike One! Greets Japanese visualists," *Telev. News*, pp. 331–392, Nov./Dec. 1931.
- [4] W. Kaempffert, "Seeing by wire and radio opens new highways in the field of communication—Practical uses of the invention described," *New York Times*, p. 5, Apr. 1927.
- [5] *Events in Telecommunications History*. Warren, NJ, USA: AT&T Archives, 1992, p. 67.
- [6] "MacArthur is Web bonanza," *Billboard*, pp. 1 and 8, Apr. 1951.
- [7] F. V. Romano, *The Golden Age of Boxing on Radio and Television: A Blow-by-Blow History From 1921 to 1964*. New York, NY, USA: Skyhorse Publishing, 2017, ch. 12.
- [8] J. P. Dawson, "Murphy 5–7 choice over LaMotta in twelve-round fight at stadium tonight," *New York Times*, p. 33, Jun. 1951.
- [9] E. L. Ham, *Broadcasting Baseball: A History of the National Pastime on Radio and Television*. Jefferson, NC, USA: McFarland & Company, 2011, p. 12.
- [10] J. Armengaud, "Le télescope Dussaud," *Nature*, vol. 26, no. 1305, pp. 385–386, May 1898.
- [11] J. Armengaud, "The Dussaud télescope," *Sci. Amer. Suppl.*, vol. 46, no. 1174, pp. 18 and 793, Jul. 1898.
- [12] D. D. Redmond, "An electric telescope," *English Mech. World Sci.*, vol. 28, no. 724, p. 540, Feb. 1879.
- [13] "British inventor sends pictures by wireless," *Daily Exp.*, p. 4, Jan. 1926.
- [14] "Television perfected, asserts london paper," *New York Times*, vol. 23, p. 10, Jan. 1926.
- [15] "Television shows panoramic scene carried by sunlight," *New York Times*, vol. 13, p. 1, Jul. 1928.
- [16] "First television of baseball seen," *New York Times*, vol. 18, p. 29, May 1939.
- [17] J. E. Miller, "Wireless of the ages," *Popular Mech. Mag.*, vol. 45, no. 1, pp. 26–30, Jan. 1926.
- [18] H. T. Peck, Ed., "Beacon," in *International Cyclopædia: A Compendium of Human Knowledge. Revised With Large Additions*, vol. 2. New York, NY, USA: Dodd, Mead, 1900, p. 335.
- [19] S. D. Peet, "Architecture in the stone age," *Amer. Antiquarian*, vol. 22, no. 6, p. 380, Nov./Dec. 1900.
- [20] E. Mehl, "Baseball in the stone age," *Western Folklore*, vol. 7, no. 2, pp. 145–161, Apr. 1948.
- [21] D. Block, *Baseball Before We Knew It: A Search for the Roots of the Game*. Lincoln, NE, USA: Univ. Nebraska Press, 2005.
- [22] J. Newbery, "The little k play: Base-ball," in *A Pretty Little Pocket Book*. London, U.K.: Newbery and Carnan, 1770, p. 43.
- [23] C. M., "An expeditious method of conveying intelligence by means of electricity," *Scots Mag.*, vol. 15, no. 2, pp. 4–73, Feb. 1753.
- [24] G. A. Thompson, Jr., "New York baseball, 1823," *Nat. Pastime*, vol. 21, pp. 6–8, 2001.
- [25] P. Morris, "Spreading the word," in *A Game of Inches: The Story Behind the Innovations That Shaped Baseball*. Chicago, IL, USA: Ivan R. Dee, 2010, pp. 548–549.
- [26] P. Morris, "Money," in *A Game of Inches: The Story Behind the Innovations That Shaped Baseball*. Chicago, IL, USA: Ivan R. Dee, 2010, pp. 462–463.
- [27] P. Morris, "Traveling men," in *A Game of Inches: The Story Behind the Innovations That Shaped Baseball*. Chicago, IL, USA: Ivan R. Dee, 2010, p. 555.
- [28] P. Morris, "Marketing and promotions," in *A Game of Inches: The Story Behind the Innovations That Shaped Baseball*. Chicago, IL, USA: Ivan R. Dee, 2010, pp. 438–442.
- [29] G. B. Kirsch, *Baseball and Cricket: The Creation of American Team Sports, 1838-72*. Champaign, IL, USA: Univ. of Illinois Press, 2007, pp. 203–204.
- [30] D. Hochfelder, *The Telegraph in America, 1832–1920*. Baltimore, MD, USA: The Johns Hopkins Univ. Press, 2012, p. 113.
- [31] P. Morris, "Ballparks," in *A Game of Inches: The Story Behind the Innovations That Shaped Baseball*. Chicago, IL, USA: Ivan R. Dee, 2010, p. 406.
- [32] "Sporting news," *Daily Inter-Ocean*, May 1875, p. 3.
- [33] P. Barker, "Bowling feats," in *Lord's Firsts: 200 Years of Making History at Lord's Cricket Ground*, Stroud, U.K.: Amberley, 2014.
- [34] "Base ball by electricity," *Elect. Rev.*, vol. 8, no. 21, p. 2, Jul. 1886.
- [35] "Notes and comments," *Sporting Life*, vol. 5, no. 7, p. 7, May 1885.
- [36] "Baseball at the opera house," *Atlanta Constitution*, vol. 18, p. 8, Apr. 1886.
- [37] "Atlanta seeing the game," *Atlanta Constitution*, vol. 18, p. 8, Apr. 1886.
- [38] "Baseball by electricity," *Detroit Free Press*, p. 8, Jul. 1886.
- [39] E. S. van Zile, "Bulletin-board and baseball indicator," U.S. Patent 402 700, May 7, 1899.
- [40] "American notes," *Electrician*, vol. 22, no. 548, p. 53, Nov. 1888.
- [41] "On a white wall," *Boston Sunday Globe*, vol. 35, no. 153, p. 20, Jun. 1889.
- [42] "How the scoreboard first came into use," *Twin-City Sentinel*, p. 4, Nov. 1921.
- [43] E. A. Grozier and F. P. Anderson, "Base-ball-bulletin board," U.S. Patent 427 508, May 6, 1890.
- [44] L. Spatz and S. Steinberg, 1921: *The Yankees, the Giants, and the Battle for Baseball Supremacy in New York*. London, U.K.: Univ. Nebraska Press, 2010, p. 470.
- [45] S. D. Mott, "Electrical sporting-indicator," U.S. Patent 444 452, Jan. 13, 1891.
- [46] S. R. Crowder, "Base ball game illustrating apparatus," U.S. Patent 543 851, Aug. 6, 1895.
- [47] S. R. Crowder, "Base ball game indicator," U.S. Patent 545 270, Aug. 27, 1895.
- [48] F. M. Chapman, "Base ball indicating apparatus," U.S. Patent 546 003, Sep. 10, 1895.
- [49] A. K. Schaap, "Base ball game illustrating apparatus," U.S. Patent 558 571, Apr. 21, 1896.
- [50] "Watched the game here," *Times*, p. 7, May 1895.
- [51] J. Harbster, "Watching baseball at the opera house," Inside Adams, Library Congress, Oct. 2012. [Online]. Available: [http://blogs.loc.gov/inside\\_adams/2012/10/watching-baseball-at-the-opera-house/](http://blogs.loc.gov/inside_adams/2012/10/watching-baseball-at-the-opera-house/)
- [52] "The Electrascrope," *Popular Electr.*, vol. 5, no. 6, pp. 584–585, Oct. 1912.
- [53] *World's Series at Massey Hall*, The Globe, Toronto, ON, USA, Oct. 1916, p. 9.
- [54] R. Edelman, "Electric scoreboards, bulletin boards, and mimic diamonds," *Base Ball*, vol. 2 no. 3, pp. 76–87, Oct. 2009.
- [55] "Baseball 'movie' Scoreboard," *Sci. Invention*, vol. 9, no. 9, pp. 805–850, Jan. 1922.
- [56] J. Kilmer, "Barrie, saddened by the war, writes little now," *New York Times*, p. 11, 1916.
- [57] J. W. Baker, "Bulletin board," U.S. Patent 1 171 830, Feb. 15, 1916.
- [58] A. Pollack, "A flawed science showplace," *New York Times*, p. D1, Sep. 1984.
- [59] "Thousands watch game on Telegram's playograph," *Evening Telegram*, p. 3, Oct. 1911.
- [60] *Shaw's Jewelry Shop. Inc. v. New York Herald Company*, New York Supreme Court, New York County, Dec. 1913.
- [61] "Better than real game," *New York Herald*, p. 13, Oct. 1921.
- [62] H. Broun, "Sweetness and light in baseball," *Vanity Fair*, vol. 16, no. 8, p. 64, Oct. 1921.
- [63] "Radio reports army-navy ball game to world," *Popular Mech.*, vol. 34, no. 8, p. 208, Aug. 1920.
- [64] H. Frommer, *Five O'Clock Lightning: Babe Ruth, Lou Gehrig and the Greatest Baseball Team in History*. Hoboken, NJ, USA: Wiley, 2008, p. 161.
- [65] R. L. Mott, *Radio Sound Effects: Who Did It, and How, in the Era of Live Broadcasting*. London, U.K.: McFarland, 2008, pp. 59–60.
- [66] "12th annual play-o-graph presentation of the world series," *Arizona Daily Star*, vol. 2, p. 12, Oct. 1934.

## ABOUT THE AUTHOR

**Mark Schubin** is an Emmy-award winning historian of media technologies. He was awarded the 2017 Presidential Proclamation of the Society of Motion Picture and Television Engineers, of which he is a Life Fellow.