



[www.telcomhistory.org](http://www.telcomhistory.org)

Summer 2024, Vol. 31, no. 2

303-296-1221

Dave Felice, editor

## A Message from Our Director

In this edition of Connections News, you'll find out how to double the value of your contribution to the Telecommunications History Group. You can get up to date on FCC activities, and learn what's happening to hundreds of famous red British phone booths.

In Denver, archive volunteers are working on cataloging records and artifacts. They have done a fantastic job on many records that have needed attention. Hint: we would gladly welcome all new volunteers!

Their counterparts in Seattle are preparing a new display about railroad telephony, which they plan to write about in a future issue of the newsletter.

We are deeply indebted to the hard-working and devoted volunteers at the museums, archives, and other locations. The volunteers are the life blood of the THG organization.

From our archivist, Jody Georgeson: We had a great time at NHDC (National History Day Competition) this year. The quality of the young historians' projects continues to amaze me. In fact, this years' entries for our special award were so good, we had difficulty in choosing the best, so we awarded two of them.

The winners were John Flower for his paper about how the Internet has affected the English language and Jerry Stone for his web site about little-known inventor Al Gross (<<https://site.nhd.org/10721846>>). Jerry also won our award last year. I'm grooming him to become a THG volunteer!

Have a wonderful summer and thanks so much for your support and love of our telecommunications history.

Sincerely,

Renee Lang, Managing Director

# NHD

## NATIONAL

### HISTORY DAY®

Studying the past helps us make sense of the present to move forward into the future. History education is essential for participatory citizenship. Knowing where we came from helps us understand where we are going. In the process, studying the past builds empathy and hones research, writing, and analytical skills.

National History Day's core program is its competition in which students in grades 6–12 choose a topic and dive deeply into the past by conducting extensive research in libraries, archives, and museums. They then present their conclusions and evidence through papers, exhibits, performances, documentaries, or websites, moving through a series of contest levels where they are evaluated by professional historians and educators.

Telecommunications History Group has partnered with National History Day in Colorado for over 20 years, both financially and through research and volunteer efforts. We also give a special award each year for the best project about telecommunications.

There were so many brilliant projects this year that we couldn't decide on just one "best," so we gave two awards. Congratulations to Jerry Stone and John Flower, winners of this year's awards. Stone is from Denver School of the Arts and Flower is a student at Montrose High School.

Jerry produced a fine web site, "Al Gross: Creating Turning Points in Wireless Portable Communication" (<https://site.nhd.org/10721846>), about an early inventor of wireless communication devices. Stone's site documents how a "walkie-talkie" military radio system eventually became Citizens Band (CB) radio on shortwave frequencies.

John's paper, "A Dialectic Revolution: The Crucial Moment in Social Network Growth and Language Diversification", highlights the pivotal role of telecommunications in changing the English language. He argues that the use of social media has brought about a new English dialect. Flower's essay traces dynamic language influences such that an English-speaker of 100

years ago would "falter in abilities to understand Internet English." He suggests that strange internet-speak actually continues traditional linguistic progression. "The complexities of the internet have single-handedly brought language back to its roots, to modes of communication that thrive in diversity of perpetual change," writes Flower.



*THG volunteer Jody Georgeson (L) presents special awards to Jerry Stone (C) and John Flower (R).*

## Federal Communications Commission restores 'Net Neutrality'

Under a new FCC ruling, internet service providers are prohibited from prioritizing content and setting preferential speeds for specific customers. The ruling designates broadband as an essential public utility, and requires all traffic to be treated equally.

"Net neutrality will result in a fast, open, and fair internet for all," says Commission



*FCC Chairwoman Jessica Rosenworcel talks about internet policy in an online video prepared by the agency (<https://www.fcc.gov/net-neutrality>)*

Chairwoman Jessica Rosenworcel.

In a separate, but related, action, the Commission is updating minimum internet speed references. This decision is based on a new report indicating many areas nationwide are not getting all the advantages of technology. (See another story in this edition of Connections News for details.)

The neutrality policy is politically controversial. Regardless of technological considerations, special interest groups are most likely to challenge the ruling.

"Broadband providers will not hesitate to use their power to increase profits at the expense of consumers," said Technology Director Justin Brookman of Consumer Reports.

Classifying broadband as an essential service, based on the "common carrier" standards of the Communications Act of 1934, theoretically gives the FCC greater authority over the accountability of service providers, updated cybersecurity, and protection of consumer data.

### Telecommunications History Group Challenge Grant 2024

In what has become an annual tradition at THG, our valued members and newsletter readers have another chance to double the value of their financial support. Every donation you make between now and August 1, 2024 will be matched equally by one of our long time supporters, up to a total of \$20,000.

If you contribute at least \$60, THG will count \$35 of that as membership dues for 2023, and the grant will match your total contribution (including the amount applied to your membership or renewal).

Visits to our museums are now well above the pre-pandemic levels and as word of THG's activities gets out in social and traditional media, even more historically interesting documents and artifacts are being offered to us. As always, we rely on our members to help us keep lights on and phones ringing so we can preserve documents and welcome the museum guests.

You may use the enclosed envelope to send a check, or you may make your donation online at <http://www.telcomhistory.org/challenge/>. Everyone at THG wants to thank you in advance for your generous and crucial help!

## FCC sees gaps in broadband, sets higher speed objectives

A new report from the Federal Communications Commission concludes that "advanced telecommunications technology" is *not* being effectively deployed nationwide. According to the agency, the gaps in implementation are "not being closed rapidly enough" to provide equitable and affordable service for the country's 330 million people.

After recently issuing rules to designate internet access as a public utility, the Commission is increasing the standard for internet speeds. Broadband now officially refers to a download speed of 100Mbps, with an upload speed minimum of 20Mbps. This updates standards of 25/3 Mbps set in 2015. The quadrupling of high-speed internet standards helps the agency, service providers, and the public determine how much progress is being made toward closing the "digital divide."



For almost a decade, the current FCC Chair Jessica Rosenworcel has argued that "anything less (than 100 Mbps) shortchanges our children, our future, and our new digital economy."

The speed standards are part of the annual agency assessment of technology in communications. The report considers broadband "affordability, adoption, availability, and equitable access...in a reasonable and timely fashion to 'all Americans', according to the FCC.

A statement from the agency says establishing a new speed standard provides a better view of the broadband needs of American households. The FCC statement says: "The fixed speed benchmark...is based on standards now used in multiple federal and state programs, consumer usage patterns, and what (service) is actually available from and marketed by internet service providers."

The latest available assessment data states that fixed terrestrial service, excluding satellite, has not been physically deployed to approximately 24 million Americans in rural areas. Over 23 percent of people living on Tribal lands experience a service gap.

About 45 million Americans do not have access to both 100/20 Mbps fixed service and 35/3 Mbps mobile. About one-third of rural areas and one quarter of Tribal lands lack 5G mobile service at minimum speeds of 35/3 Mbps.

The FCC report says three-quarters of school districts nationwide meet the new interim goal of one megabit service for students and staff.

Some mobile networks are helping to close the service gap. Verizon, T-Mobile, and other cellular carriers offer 5G home internet service as an alternative to wired broadband. The service is relatively new, and ratings on quality are mixed.

The FCC has offered billions of dollars in financial grant support for internet services. The Affordable Connectivity program provides subsidies for eligible households and institutions. This assistance helps families afford the broadband they need for work, school, healthcare and more. The qualified participants get a discount of up to \$30 per month toward internet service. Other support is intended to close the homework gap by funding reasonable costs of computers and network equipment in schools and libraries.

## Museum presents technology roots

Another Seattle journalist is intrigued by the artifacts and volunteers at the Connections Museum of the Telecommunications History Group.

"Indeed, there is much to love at the museum which traces the history of the telephone from the late 19th century to the early digital era. Volunteers keep the technology working, organize exhibits, and provide guided tours," writes Sally J. McMillan.

She is a contributor to the Seattle online news magazine *Post Alley*. Her article is at <https://www.postalley.org/2024/05/12/reconnecting-with-our-technology-roots-a-georgetown-museum/>.



McMillan tells how Max Arnold, 23, recently visited the museum and became a volunteer the next week. "Arnold works in computer security by day, bakes for fun, and volunteers at the [Connections Museum](#) in Seattle's Georgetown," says McMillan. "His meticulous attention to detail will return the museum's Number 5 Crossbar telephone switching system to full working order."

McMillan's story focuses on the "younger" volunteers. In the last decade, the age of many volunteers has dropped from about 60 to those in their 20s and 30s, notes McMillan. Jay De Jaen is a 26-year old electrical engineer who recently restored a Picture Phone. Aiden Kelly, a computer science student aged 22, started volunteering after he graduated from high school. He now works on dial-up equipment at the museum.

Arnold, De Jaen, and Kelly are among the youngest of the museum's 23 active volunteers, according to McMillan. Sarah Autumn, now 39, has been volunteering for over ten years. She tends the museum's panel telephone switch (Connections News, Spring 2023). Astronomer Colin Slater, 36, works on a recently accessioned Nortel DMS-10 digital Central Office switching system. Twenty-seven-year-old Claire Violet manages the library, gift shop items, and display signs.

McMillan writes about how the volunteers appreciate the sights and sounds of the older equipment. "Modern computers have removed the 'visible logic' from how things work," says Arnold. "With the smartphone, you need to have a scanning electron microscope to see the transistors. So, there's really no hope of ever understanding them."

Kelly says a person can look at an old analog machine and see how it works. It's as if the machines are "singing to one another." To get full authenticity, Autumn wanted an original ringing machine for the panel switch. She found one in Connecticut and traveled to get it.

Sally J. McMillan is the author of [Digital Immigrants and Media Integration](#). She has been a high school teacher, book editor, non-profit leader, journalist, technology executive, university professor, academic administrator, and higher education consultant.

## Carrying on with British phone history

From the country of Winnie The Pooh, the Mini automobile, and British Invasion music now come re-usable phone booths.

As phone enclosures disappear in the rest of the world, BT (British Telecom) is making thousands of decommissioned iconic red "call boxes" available for community purposes.

In many cases, these call boxes are part of the community heritage, especially in rural



locations. Celebrating the 100th anniversary of phone boxes, BT is offering the domed booths to government and community agencies for creative new purposes such as mini-libraries and museums, food banks, art galleries, and even defibrillator stations.

Local councils, parishes, and other registered charities can apply for ownership transfer to use the phone boxes for public good.

"It's a great opportunity to remind communities that would like to retain their local kiosk to take it on for just one pound (\$1.27)," says Michael Smy of BT. "We've already seen some great kiosk conversions across the UK that have become valuable community assets."

Since the program started last year, over 5,000 communities have taken advantage of the Adopt-a-Kiosk program.

Designed in 1924 by Sir Giles Gilbert Scott, the red call boxes are a familiar site throughout the UK and current or former British colonies around the world. A postage stamp issued in 2009 commemorated what is formally known as "the K2 telephone box." A slightly streamlined version K6 was introduced in 1935. It was eight feet tall and weighed 1300 pounds. Most of the phone boxes are made of industrial grade steel with reinforced glass windows. In 1990, there were 100,000 phone boxes. About 21,000 remained in use in 2021.

Several of the booths are located at public locations around the United States. The Telecommunications History Group Connections Museum in Seattle has a booth on display and a red box is in use at the Massachusetts Institute of Technology in Boston.



If a government-owned phone box is on private property, the landowner can apply to acquire the booth for community use. Private individuals who want a booth can buy one through BT partner X2Connect. Prices for a K6 booth start at £1750 (about \$2,200). The new owner would have to organize how to move the half-ton booth, but X2Connect can arrange delivery at additional cost. A future edition of Connections News will have the story of how one red phone box made the journey to the Connections Museum in Seattle.

Pay phone usage declined dramatically as mobile phone usage increased. Before launching the kiosk adoption program, the company conducted an extensive study of which phones might be considered essential and which could be decommissioned. In some instances, pay phones with low usage were left in service because the phones provided critical service. Remote phones often have battery power.

Many Britons are very serious about the historic phone enclosures. BT introduced a more contemporary design, Model K8, with single glass panels and door, in 1968. Relatively few of the new booths were installed. The K8 did have a slightly different red color which then became the national standard.

In preparation for converting the company from government to private operation in the early 1980s, the then-new British Telecom suggested repainting phone boxes in the BT corporate yellow color. BT retreated after a public outcry that even reached the Prime Minister's office. One newspaper called the change of color a "yellow peril."

About 2,000 of the red boxes in prominent locations have "listed status" with recognized historical significance.

In sparsely populated areas, such as Yorkshire Dales or Scottish Highlands, the red phone box is a directional landmark or a prominent feature in the village square. Often, a round postal drop box is located adjacent to the phone.

"It's a fact that no-one really uses payphones anymore, but they look quite iconic, especially in rural areas, so we wanted to retain ours from a heritage perspective," says a parish council official in North Yorkshire.

One national organization is installing electronic heartbeat defibrillators in several old phone boxes. The national secretary of Community Heartbeat Trust says repurposing for this life-saving use has given the phone boxes "a new lease on life."

BT describes its Adopt-a-Kiosk as "turning old phone boxes into new community treasures." According to the sale contract, the booth can be used for any lawful purpose except telephony. BT retains the trademark rights to use the enclosures for electronic communications. Otherwise, any local government or charitable organization can acquire one of the red boxes after the telephone apparatus is officially removed.

The most common use of a community kiosk is as a free library operating on the honor system. People donate books they no longer want and take books from the shelves inside the booth.



## Disliked phone tone becoming a relic

A now rare "Busy Signal" is the theme of 1961 popular song by singer Freddy Cannon. The lyrics tell of the frustration of a man calling his girl friend and getting the audible sound indicating another call is in progress.



The song *Buzz Buzz A-Diddle-It* goes on with several bygone telephone references. The caller, in a telephone booth, asks the Operator to break into the call ("Will you accept an emergency call?"), a practice which ended with the demise of live operators.

The caller gives the number with an Exchange Name (Central) and five digits "3-Oh-ninety-nine". The caller ends by saying the future of his relationship "hangs on" completing the call.

By definition, a busy signal is the repeating *bwaz-bwaz* every half-second that a caller hears indicating the line being called is in use. A "fast busy", also known as reorder tone, indicates the call cannot be connected because of network problems.

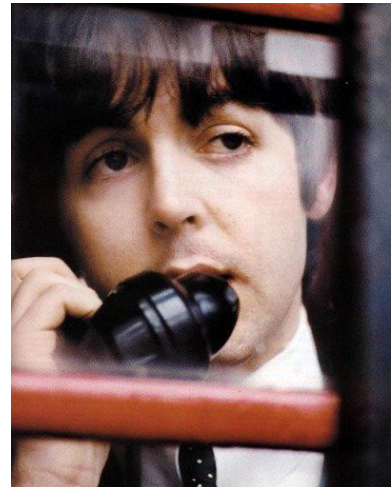
The Beatles refer to busy signal in their song "You Won't See Me" on the 1965 album *Rubber Soul*. Using the British terminology, they sing "When I call you up your line's engaged." Canadian singer Anne Murray also recorded this song. Jamaican singer-musician Reanno Devo Gordon is better known by his stage name, Busy Signal.

*Buzz Buzz* was also recorded in 1991 by the English rockabilly group, Matchbox. A busy signal was used in a TV commercial in 2011, by the cellular phone company known as Sprint (now part of T-Mobile).

When mechanical answering machines operated with cassette tapes, one creative user avoided getting calls by recording several minutes of busy signal on a cassette. When the tape was loaded as the outgoing message, a caller would get a busy signal when the answering machine was activated.

The busy signal is rarely heard now because of increasing use of Call Waiting and electronic voicemail in recent decades. With digital phones, callers might only get a busy signal with active call block or rejection, call forwarding, voicemail on or off, or network congestion.

Freddy "Boom Boom" Cannon, now 87, is from the North Boston suburb of Revere. Cannon says he likes the *Buzz* recording because it energetically expresses the frustrating sound of a busy signal. The song was written by Bob Crewe, who worked with the The Four Seasons group, and Frank Slay Jr. The song can be heard at [www.youtube.com/watch?v=xaR6WrBN09c](http://www.youtube.com/watch?v=xaR6WrBN09c).



Original story by Dave Felice

The Connections News newsletter is copyrighted by the Telecommunications History Group. Permission to reprint with appropriate credit is granted to other nonprofit organizations or for educational purposes. No financial consideration is allowed for reprints.



## Famous words still valid

A brief utterance represents a pioneering moment in telecommunications history. Alexander Graham Bell was using the telephone effectively when the inventor said the famous first words, "Mr. Watson, come here. I want (to see) you."

Now, nearly 150 years later, Mary Jane Copps says "reports of the death of phone calls as part of business success remain an exaggeration." Copps, known as "The Phone Lady," specializes in helping businesses and individuals make better use of the telephone. She comments in summarizing an extensive just-completed survey of business leaders.

According to Copps: "Phone communication plays a vital role in both sales and customer service. Difficulties and challenges in communicating by phone negatively impacts customer satisfaction and sales performance."

The Phone Lady is based in Halifax, Nova Scotia. Survey responses came from the U.S., Canada, Great Britain, and France. Over three-quarters of those responding ranked phone conversations as very or extremely important.

A preference for digital communication is a significant challenge. Copps says there is a generational divide, "with younger team members choosing the digital options they've used throughout their lifetime." She quotes a senior Canadian executive who says phone contact is difficult: "some (employees) are saying they are experiencing mental health issues, anxiety, and sleeplessness from knowing they will have to deal with clients by phone."

In addition to discomfort, Copps says, "the improvisational nature of phone conversations can be intimidating." She says the complexity is sometimes compounded by language, culture, and etiquette differences.

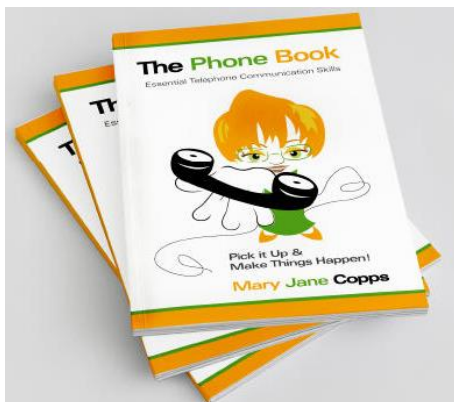
There are opportunities to turn adversity into success, says Copps. Conversation can be

paired with digital tools, discussions enhance video meetings, training helps employees develop special skills for "cold" calling, and operational difficulties can be identified and overcome.

"The survey indicates businesses will benefit from a hybrid approach, using digital channels as well as the phone," Copps summarizes. "Mastery of phone communication will be a critical component, enabling businesses to adapt their communication strategy to the preferences of the audience, whether clients or team members."

The full report is available at <https://thephonelady.com/phone-communication-trends/>. The Phone Book by Mary Jane Copps is available from Amazon.

Traditional Canadian Territorial Acknowledgement: *In Nova Scotia, we are in Mi'kma'ki, the ancestral and unceded territory of the Mi'kmaq People.*



## Limited edition designer phones disappear

Modifying a DesignLine™ phone for local exchange use stretches the limits of AT&T corporate standards. But that's what happened in Utah in 1979, when students returned for the fall term at Brigham Young University in Provo and Weber State College in Logan.

I was working in Mountain Bell's Utah Public Relations office at the time. PR District Manager Ken Hill asked the rest of the local staff and me for a promotion scheme aimed at dormitory and residential students. Hill had a reputation for forward-thinking activities to increase visibility and revenue. He approved our plan to produce a limited number of phones with the exterior appearance tailored specifically for each university.



The BYU "Cougar Phone" was a blue Accent model, with blue printing on a white band around the base. The band showed a reclining cougar in a basketball uniform.

The Weber State phone was a white Exeter model with a white wildcat mascot on a purple face plate.

The adhesive band and face plate were designed and made by a specialty printing company in Salt Lake City.

Because the modifications were external and minimal, service representatives could essentially "make" the phones as they were ordered. Students could pick up their sets at PhoneCenter Store displays set up in the student centers.

**Talk about convenience, now it's right here on campus.**

At Mountain Bell's on-campus PhoneCenter Store, you'll find all the telephone products and services you need at one convenient location. The PhoneCenter Store is in Room 109 of the Wilkinson Center through September 7. It's open Tuesday through Friday, from 8:30 to 5:00.

When you get your telephone at the PhoneCenter Store, you get quick service and save on installation charges. Select from a wide variety of styles, including the Cougar Phone and Design Line® Phones.

Visit your own on-campus PhoneCenter Store. And find out why we call it "the store that talk built."

Mountain Bell PhoneCenter Store  
Room 109, Wilkinson Center  
Open through September 7  
Tuesday through Friday  
8:30 a.m. to 5:00 p.m.

Mountain Bell

\*Trademark of American Telephone & Telegraph Co. Installation, extension, and Touch-Tone charges may apply.

The experience validates John Gardner's observation that "History never looks history when you are living through it." All that remains of the custom phone promotion are a BYU microfilm archive article and advertisement from the *Daily Universe* newspaper of August 30, 1979 (shown in this story). A front-page item in the *Utah Tie Line* employee newspaper had a photograph of the two phones, but there are no known copies of that newspaper remaining.

About two dozen of the phones were sold during fall back-to-school activities at the two universities. To the best of anyone's knowledge, there are none of the custom phones still in existence. The sets have apparently all disappeared with the passage of time.



## Bell tinkering linked to music streaming

In an indirect way, Alexander Graham Bell had a big role in current music industry developments and how today's listeners get their content.

New Mountain Capital has bought BMI, the large performance rights administration company. Music management company Universal settled a dispute with a powerful social media company over music licensing and distribution. Alexander Graham Bell's first practical telephone grew from his experiments in voice reproduction, setting the stage for the eventual explosion in recorded music.



In the late 1800s, numerous inventors – including Thomas Edison – worked on improving telegraph and telephone technology. Originally looking for a way to record telegraph messages, Edison devised a revolutionary method of capturing audio, and more importantly, replaying the sound. Edison introduced his "phonograph" in 1877. The device used foil cylinders to record and reproduce sound vibrations in a manner similar to Bell's telephony. Despite the almost overwhelming potential, Edison stepped back to concentrate on the incandescent light bulb.

At Volta Laboratories, Bell and associates Benjamin Hulme, Charles Sumner Tainter, Harvey Christmas, and cousin Chichester Bell introduced the Graphophone in 1885. This reproduction system used wax cylinders, featuring better sound and storage capability. The Volta team also developed a method of cutting grooves laterally, leading to the flat disc process.

By 1888 the Edison company also used solid wax cylinders. Technology improved along with sound reproduction and the industry burgeoned.

As recorded music became more popular, songwriters and publishers formed ASCAP (American Society of Composers, Authors, and Publishers) to administer performance payments. In 1939, the National Association of Broadcasters disagreed with ASCAP fees and formed BMI (Broadcast Music Incorporated). Now, BMI has a new owner and the sale reportedly reserves \$100 million to be distributed to songwriters and publishers.

Disputed performance license fees recently resulted in a deadlock between Universal Music and the social media company TikTok. Essentially, the user doesn't want to pay increased licensing fees, with the result that Universal has stopped allowing its music to be played on TikTok. Universal says its artists are allowed to earn fair compensation; the media company contends smaller, mostly amateur, content providers are being deprived of using the music for profit.

Some professional performers contended they would lose a powerful marketing tool and not reach the largest audience. According to the music industry publication Variety, however, TikTok may be useful for discovering something new, but is not a primary destination for listening.

With Edison focusing on electrical power, Bell companies continued their interest in sound reproduction, always striving for the highest possible quality. Volta became Bell Laboratories, providing research and development. The Western Electric subsidiary produced and distributed products both for consumer and commercial applications. Western enabled AT&T to own and operate radio stations and movie theaters. The WE Vitaphone brought sound to movies. By the late 1920s, most record companies had adopted Western Electric recording technology. The Westrex record cutting system, in various incarnations, is still in use today. Western Electric microphones, especially the 639A "Birdcage" are legendary.





**TELECOMMUNICATIONS  
HISTORY GROUP**